

**POPULATION ESTIMATES FOR PEARY  
CARIBOU AND MUSKOX ON BANKS ISLAND  
NT, JULY 1982 – A RETROSPECTIVE  
ANALYSIS**



Northwest  
Territories Environment and Natural Resources



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ANALYSIS**

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**ABSTRACT**

Latour (1985) conducted a stratified strip transect aerial survey of Banks Island in 1982. We re-analyzed the data using current standard statistical methods and measured linear distances and areas using current GIS technology. The population estimates derived for Peary caribou and muskoxen during our analyses did not differ significantly from the original analyses. The area of Banks Island surveyed in 1982 was originally over estimated, as a result when we extrapolate the results of our analyses to the island, the mean estimates for the number of Peary caribou and muskoxen numbers are approximately 950 and 1,600 higher, respectively than the results of the original extrapolation. Maps showing the distribution of non-calf and calf Peary caribou and muskoxen on the island are provided.



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## INTRODUCTION

Latour (1985) conducted one of the first systematic surveys of Peary caribou and muskoxen on Banks Island in 1982. Latour's (1985) original survey data and maps were archived at the Department of Environment and Natural Resources regional office in Inuvik, NT. The methods that were available to biologists working in remote locations to measure areas of survey blocks and lengths of transect lines were relatively crude in 1982. The technology that is available for geo-spatial analyses has advanced significantly since 1982. The use of computerized geographic information systems (GIS) and global positioning systems (GPS) and associated software has become commonplace among field biologists. As a result, survey areas and transect lengths can be measured more precisely. The latitude and longitude locations of wildlife sightings are commonly documented in the field using a GPS. We used current GIS, GPS, and population estimation programs to re-analyze the results of the 1982 Banks Island survey. The results of surveys completed in 1985 (McLean *et al.*, 1986), 1987 (McLean, 1992), 1989 (McLean and Fraser, 1992), 1992 (Nagy *et al.*, 2007b), 1994 (Nagy *et al.*, 2007c), 1998 (Nagy *et al.*, 2007d) will be re-analyzed in a similar manner in the future to standardize all population estimates derived for Peary caribou and muskoxen on Banks Island. The results of our re-analysis of the 1982 Banks Island survey data are presented here.

## METHODS

We re-analyzed the results of the 1982 Peary caribou and muskox survey conducted by Latour (1985) using ArcView 3.2 GIS software (Environmental Systems Research Institute) and GPS (OziExplorer GPS Mapping Software). We digitized the location of each observation made using OziExplorer. Each labeled each waypoint with Latour's (1985) original field sighting numbers. The resulting OziExplorer waypoint files were parsed using Microsoft Excel and the data for each observation was then entered from Latour's (1985) field data sheets. At the end of this process the survey data were geo-referenced. This allowed us to map the distribution of Peary caribou and muskoxen observed during the survey.

In addition, we used the original field survey maps (Latour, 1985):

- to create shape files for each survey block so that total area of each could be measured using ArcView 3.2 GIS software, and
- to digitize the locations of the end points of each transect flown so that the length of each transect could be determined using OziExplorer.

The specifications of the projection used are as follows: Lambert Conformal Conic, NAD83, Central Meridian: 123.0 W, Latitude of Origin: 73.0 N, SP1: 72.0 N, SP2: 74.0 N.

Latour (1985) surveyed 7 blocks but analyzed the data as 3 blocks by pooling the data for blocks in the southern portion of the island. We analyzed the data as presented in Appendix A (Latour, 1985) using Aerial2 Version 3 (Krebs, 1999) but used strata areas and transect lengths measured using ArcView 3.2

GIS software and OziExplorer. We also analyzed the data for each of 7 survey blocks separately using Aerial2 Version 3. Estimates of non-calf, calf, and all caribou and muskoxen, respectively, were derived for each survey block. Population and variance estimates from each stratum were combined to derive an overall population and population variance estimate for non-calf, calf, and all caribou and muskoxen, respectively, in all survey blocks.

The estimation of population number and variance from stratified surveys is given in Compton *et al.* (1995) cited by Johnson *et al.* (2004). The total population number is the summation of individual strata estimates (equation 1):

$$\hat{N}_{total} = \sum_{h=1}^L \hat{N}_h$$

where there are  $L$  strata units. Assuming that the selection of sample units within each strata is independent of other strata units, the variance is estimated as the sum of individual variance estimates for each strata, or (equation 2):

$$\text{var}_{total} = \sum_{h=1}^L \text{var}_h$$

Confidence intervals for the population estimate can be approximated by (equation 3):

$$\hat{N}_{total} \pm t \sqrt{\text{var}_{total}}$$

The degrees of freedom ( $d$ ) for the t-statistic can be approximated by the following formula (equation 4):

$$d = \frac{\left( \sum_{h=1}^L a_h s_h^2 \right)^2}{\left[ \sum_{h=1}^L \left( (a_h s_h^2)^2 / (n_h - 1) \right) \right]}$$

where  $a_h = N_h(N_h - n_h) / n_h$  where  $N_h$  is the possible number of transects in an individual block and  $n_h$  is the actual number of transects flown. The sample variance from each block is denoted as  $s^2$  in the above formula, and  $L$  is the total number of strata (Compton *et al.*, 1995) cited by Johnson *et al.* (2004). This assumes that the population estimates and variance estimates from each strata are unbiased and independent.

We derived the percent of the island survey as follows:

$$= \text{population estimate for the area surveyed} / (\text{area surveyed} / \text{area of the island}) \text{ (as a decimal value)}$$

We estimated the upper and lower 95% CI for the resulting whole island population estimate as follows:

$$= \text{population estimate for area surveyed} \pm [\text{population estimate for area surveyed} \times (95\% \text{ CI} / \text{population estimate for area surveyed})]$$

We mapped the distribution of calf and non-calf caribou and muskoxen using ArcView 3.2 GIS software (Environmental Systems Research Institute)

## RESULTS AND DISCUSSION

The survey blocks and transects flown are shown in Figure 1. The sites where non-calf and calf Peary caribou and muskoxen were observed during the 1982 survey are shown in Figures 2, 3, 4, and 5. Table 1 provides a summary of the population estimates for non-calf Peary caribou and muskox based on a re-analysis of the data for 3 strata as presented in Appendix A by Latour (1985). Table 2 provides population estimates for non-calf and calf Peary caribou based



on an analysis of data for 7 strata using Latour's (1985) original field data. Similarly, Table 3 provides population estimates for non-calf and calf muskoxen based on an analysis of data for 7 strata using data Latour's (1985) original field data. Table 4 provides a summary of comparison made between area and population estimates derived by Latour (1985) and our re-analysis of the data. Appendix A provides the transect data for the 1982 survey based on Latour (1985). Appendix B and C provide the data associated with sightings of Peary caribou and muskoxen, respectively, made during the 1982 survey based on Latour (1985) original field data.

#### **Size of Survey Blocks and Banks Island**

Latour (1985) indicated that 64,507 km<sup>2</sup> or 91.4% of the island (area 70,582 km<sup>2</sup>) was surveyed during 1982. Our analyses indicate that 56,333 km<sup>2</sup> or 79.8% of Banks Island was surveyed. The size of the area surveyed was 8,174 km<sup>2</sup> smaller than originally reported.

#### **Peary caribou**

The population estimate based on re-analysis of the data for 3 strata for Peary caribou as presented by Latour (1985) and pooling the variance estimates for the 3 strata was  $7,391 \pm 2,272$  (95% CI). The whole island estimate was  $8,087 \pm 2,486$  (95% CI). In comparison, the population estimate based on an analysis of the data for 7 strata based on Latour (1985) and pooling the variance

estimates for the 7 strata was  $7,212 \pm 2,336$ . The whole island estimate was  $9,036 \pm 2,927$  (95% CI).

The population estimates for the 3 strata vs. 7 strata analyses were not significantly different ( $t^2=0.117$ ,  $DF=35$ ,  $P>0.05$ ). Similarly, the whole island population estimates based on extrapolating results of the 3 strata vs. 7 strata analyses were not significantly different as the 95% CI's overlapped. However, the mean whole island estimate based on the 7 strata analysis was 949 non-calf caribou higher than that for the 3 strata analysis. This difference was largely due to the fact that 79.8% of the island was actually surveyed rather than 91.4% as originally reported. The magnitude of this difference may have significant implications for other analyses or management decisions.

### **Muskox**

The population estimate based on re-analysis of the data for 3 strata for muskox as presented by Latour (1985) and pooling the variance estimates for the 3 strata was  $9,925 \pm 2,550$  (95% CI). The whole island estimate was  $10,860 \pm 2,790$  (95% CI). In comparison, the population estimate based on an analysis of the data for 7 strata based on Latour (1985) and pooling the variance estimates for the 7 strata was  $9,961 \pm 2,432$ . The whole island estimate was  $12,481 \pm 3,047$  (95% CI).

The population estimates for the 3 strata vs. 7 strata analyses were not significantly different ( $t^2=0.022$ ,  $DF=36$ ,  $P>0.05$ ). Similarly, the whole island population estimates based on extrapolating results of the 3 strata vs. 7 strata

analyses were not significantly different as the 95% CI's overlapped. However, the mean whole island estimate based on the 7 strata analysis was 1,621 non-calf muskoxen higher than that for the 3 strata analysis. Again, this difference was largely due to the fact that 79.8% of the island was actually surveyed rather than 91.4% as originally reported. The magnitude of this difference may have significant implications for other analyses or management decisions.

## REFERENCE LIST

- Compton, B.B., Zager, P., and Servheen, G. 1995. Survival and mortality of translocated woodland caribou. *Wildlife Society Bulletin* 23: 490-496.
- Environmental Systems Research Institute. ArcView GIS:Release 3.2 [software]. Redlands, California: Environmental Systems Research Institute, 1992-1999.
- Johnson, C.J., Parker, K.L., Heard, D.C., and Seip, D.R. 2004. Movements, foraging habits, and habitat use strategies of northern woodland caribou during winter: Implications for forest practices in British Columbia. *BC Journal of Ecosystems and Management* 5: 22-35.
- Krebs, C.J. 1999. *Ecological Methods*, 2nd edition. Benjamin/Cummings, California.
- Latour, P. 1985. Population estimates for Peary caribou and muskoxen on Banks Island in 1982. NWT Wildlife Service File Report No. 49. 21 pp.
- McLean, B., Jingfors, K., and Case, R. 1986. Abundance and distribution of muskoxen and caribou on Banks Island, July 1985. Department of Renewable Resources, Government of the Northwest Territories, Inuvik, NWT File Report No. 64. 45 pp.
- McLean, B.D. 1992. Abundance and distribution of caribou and muskoxen on Banks Island, NWT July 1987. Department of Renewable Resources, Government of the Northwest Territories, Inuvik, NWT File Report No. 95. 28 pp.
- McLean, B.D. and Fraser, P. 1992. Abundance and distribution of Peary caribou and muskoxen on Banks Island, NWT June 1989. Department of Renewable Resources, Government of the Northwest Territories, Inuvik, NWT File Report No. 106. 28 pp.
- Nagy, J.A., Gunn A., and Wright, W.H. 2007b. Population estimates for Peary caribou and muskox on Banks Island, NT, August 1992. Department of Environment and Natural Resources, Government of the Northwest Territories, Inuvik, NT, Canada. In prep.
- Nagy, J.A., Larter, N., and Wright, W.H. 2007c. Population estimates for Peary caribou and muskox on Banks Island, NT, July 1994. Department of Environment and Natural Resources, Government of the Northwest Territories, Inuvik, NT, Canada. In prep.

Nagy, J.A., Larter, N.C., and Wright, W.H. 2007d. Population Estimates for Peary caribou and muskox on Banks Island, NT, July 1998. Department of Environment and Natural Resources, Government of the Northwest Territories, Inuvik, NT, Canada. In prep.

OziExplorer GPS Mapping Software D&L Software Pty Ltd. Version 3.95.4m.

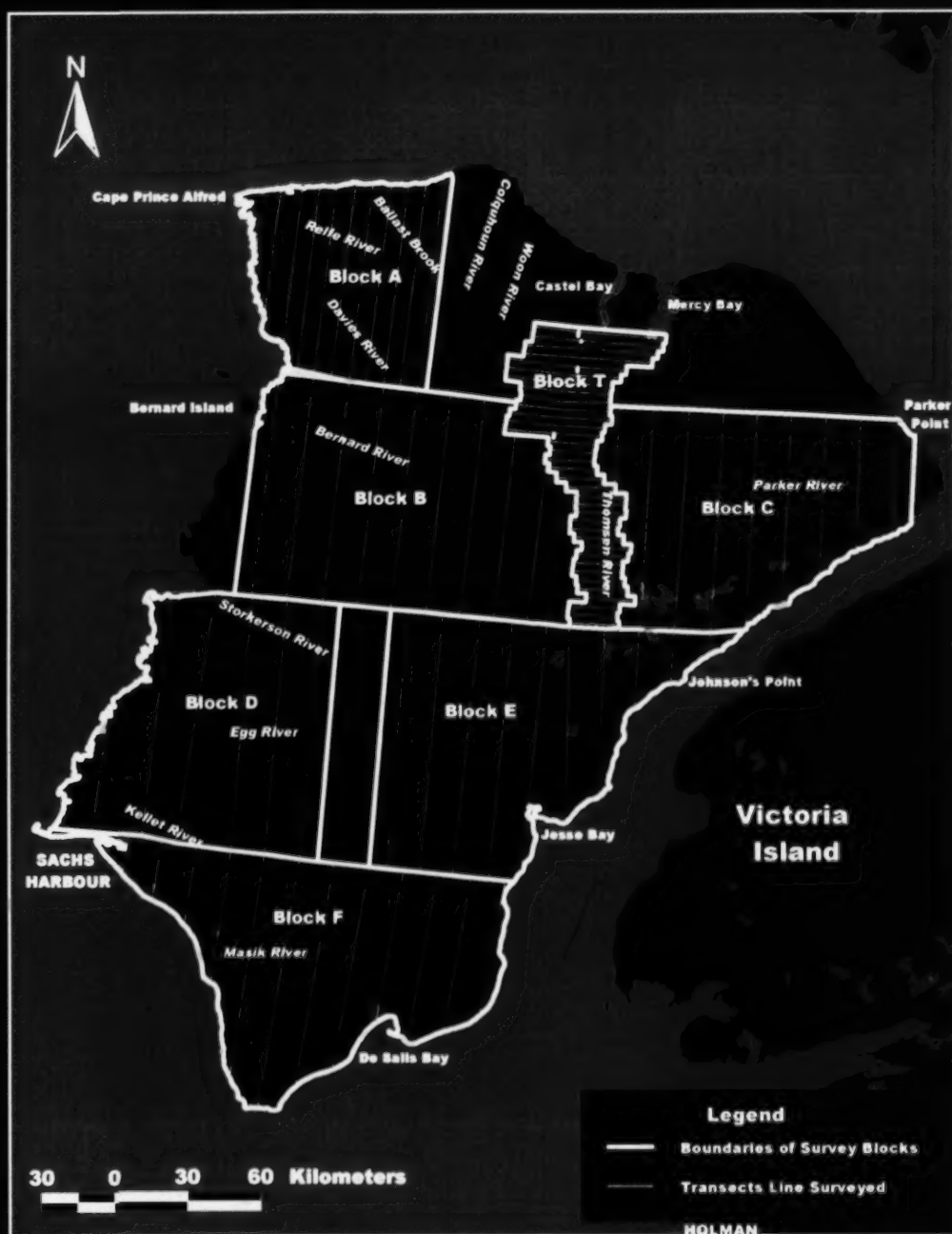


Figure 1. Blocks and transects surveyed in 1982 based on Latour (1985).



**Figure 2.** Distribution of non-calf Peary caribou during 4 to 10 July 1982 based on (Latour 1985).



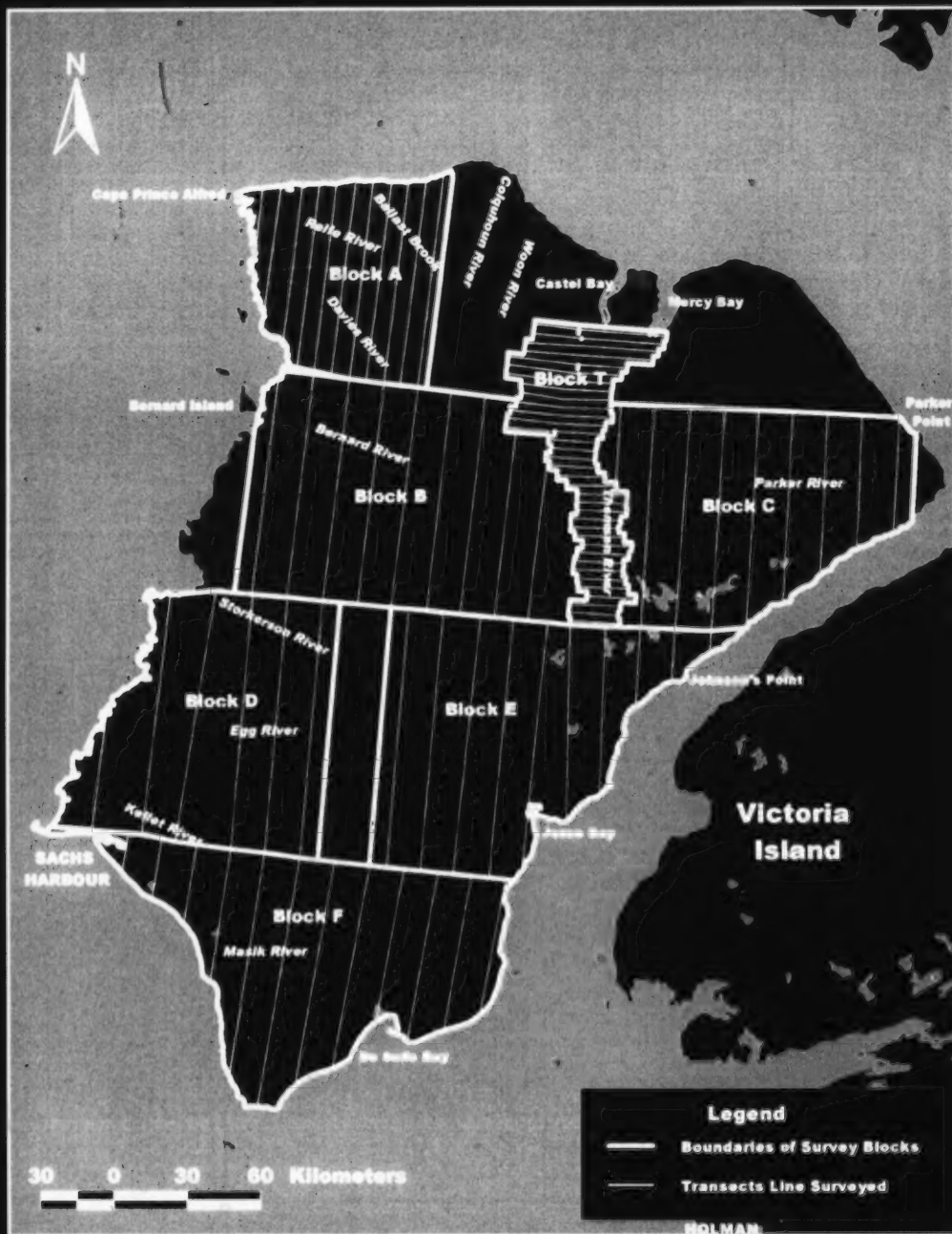
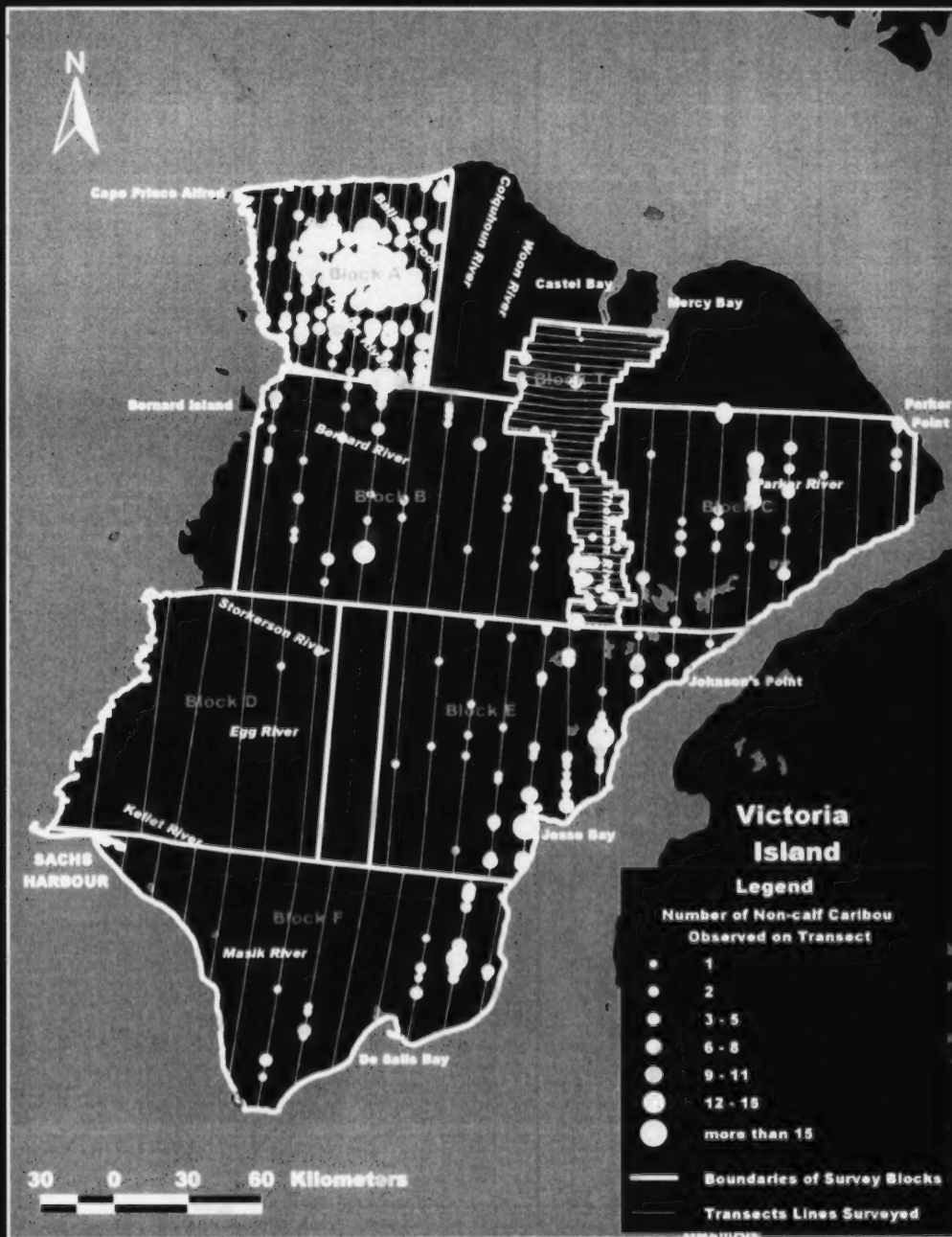


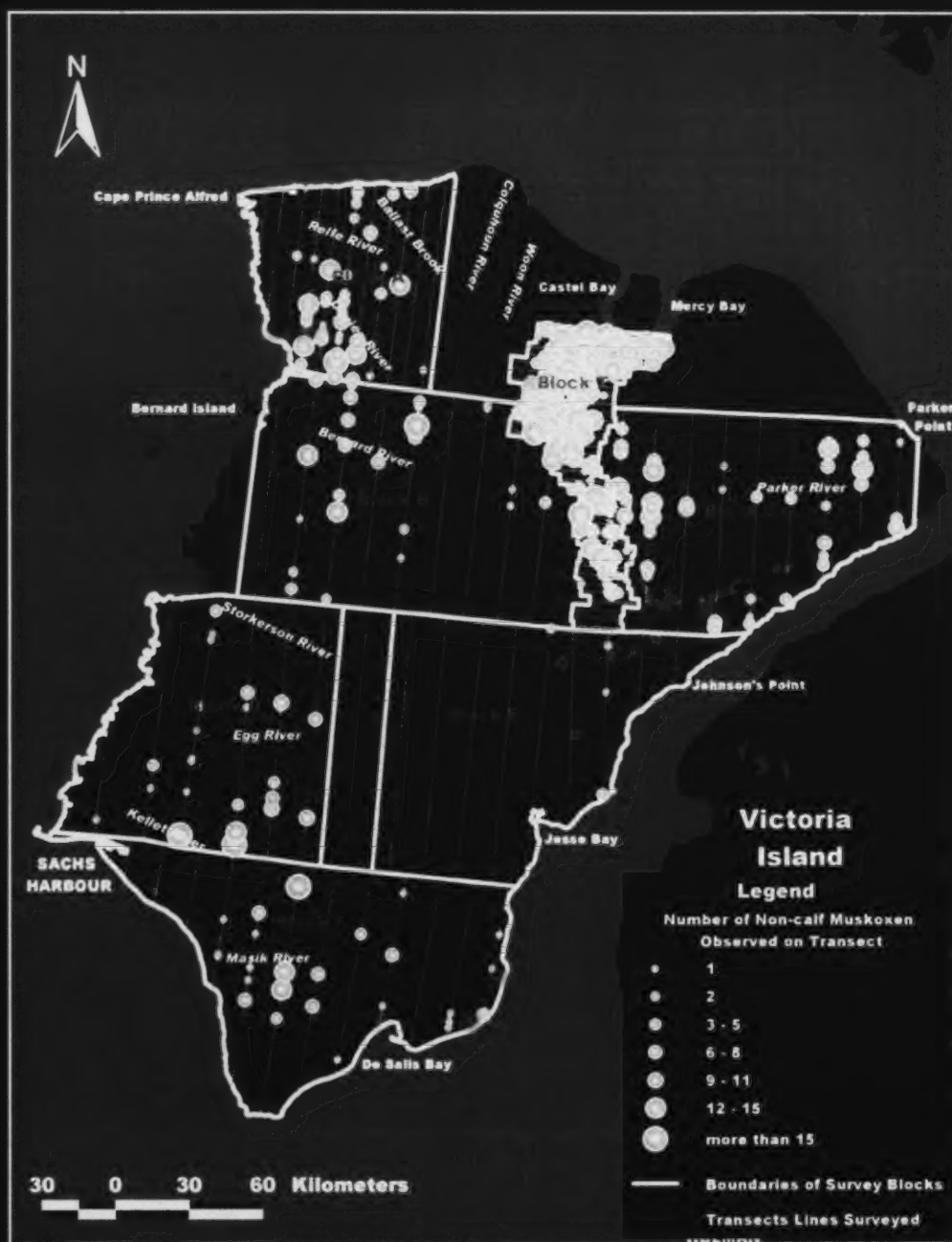
Figure 1. Blocks and transects surveyed in 1982 based on Latour (1985).



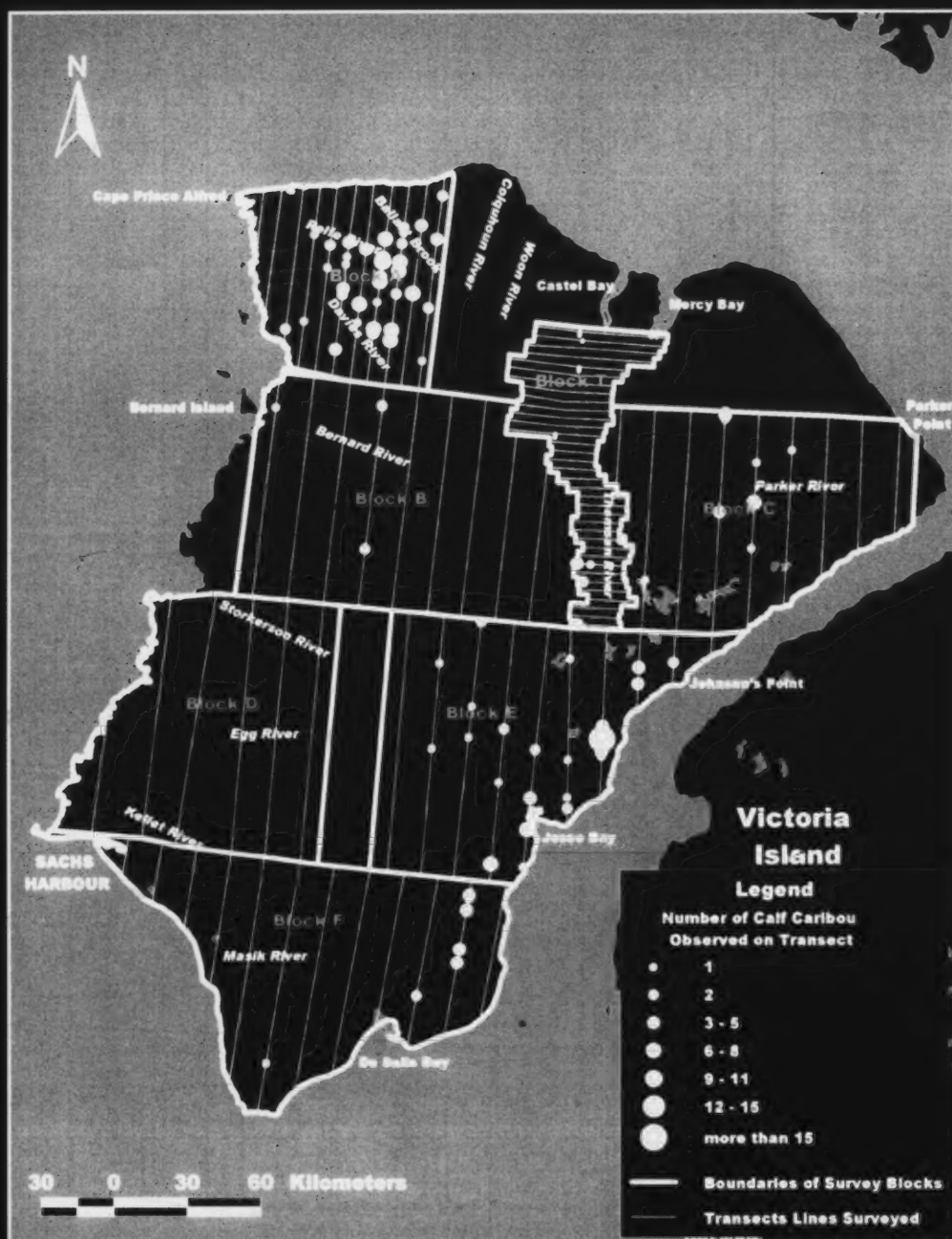


**Figure 2.** Distribution of non-calf Peary caribou during 4 to 10 July 1982 based on (Latour 1985).

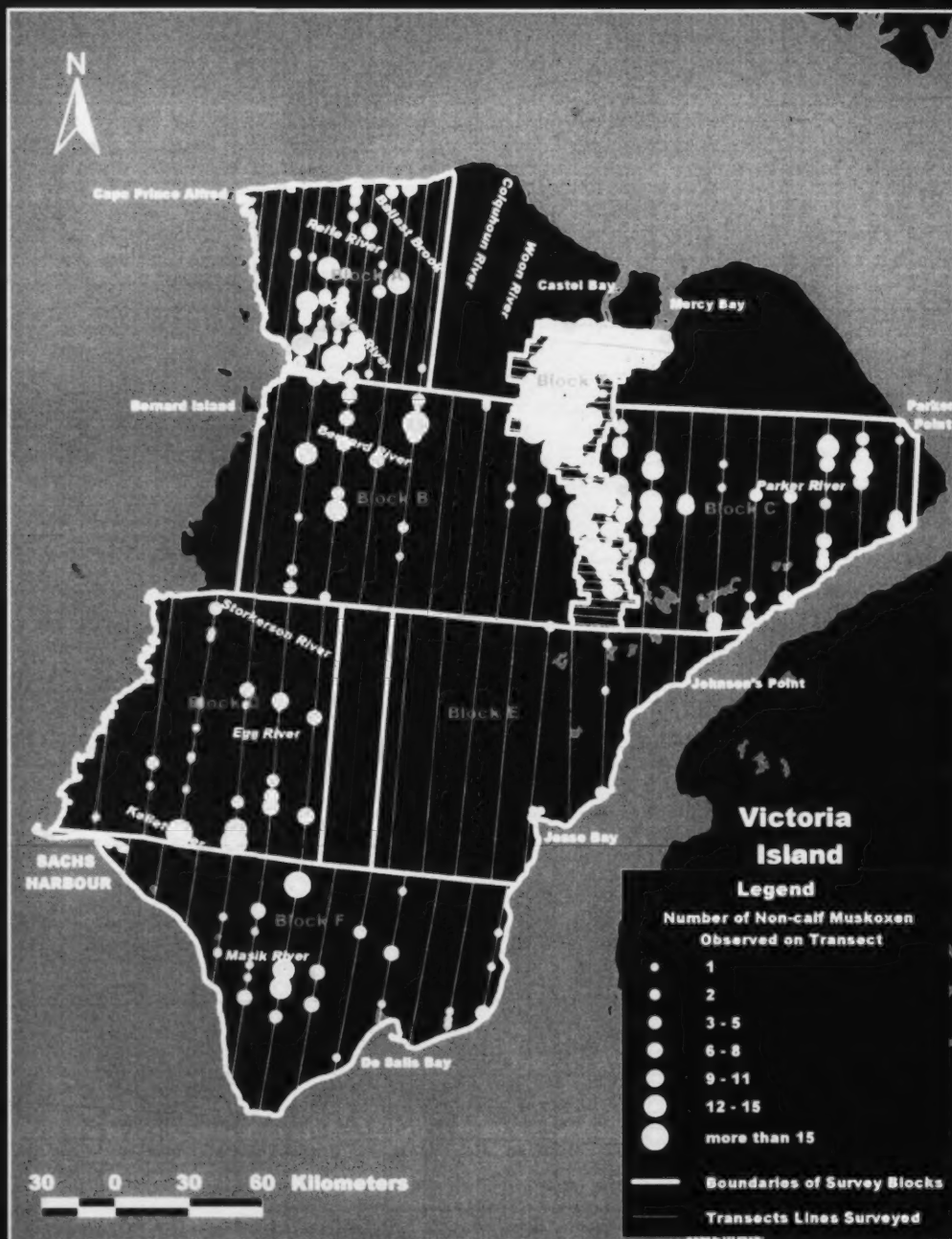




**Figure 4.** Distribution of non-calf muskoxen during 4 to 10 July 1982 based on Latour (1985).



**Figure 3.** Distribution of calf Peary caribou during 4 to 10 July 1982 based on Latour (1985).



**Figure 4.** Distribution of non-calf muskoxen during 4 to 10 July 1982 based on Latour (1985).

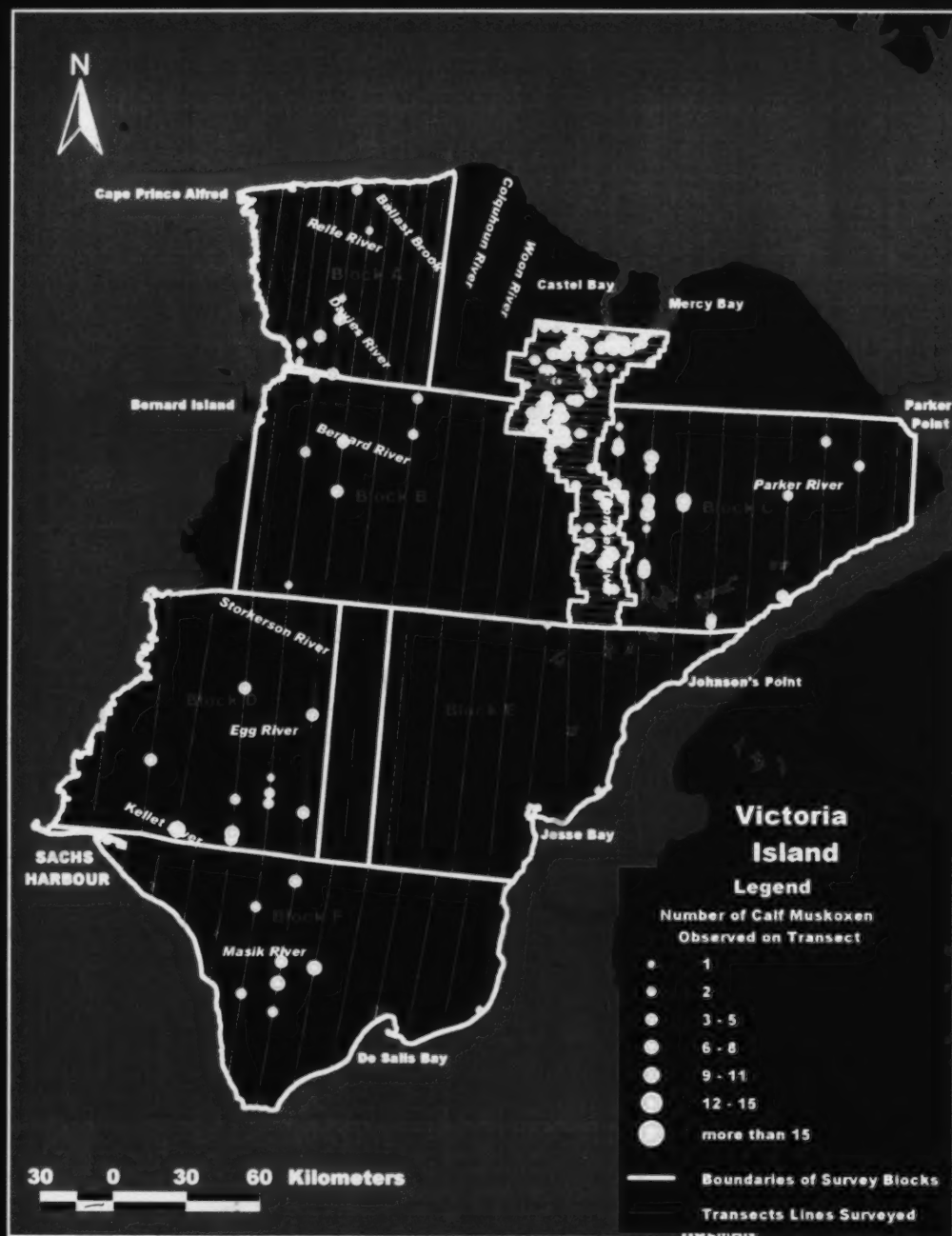
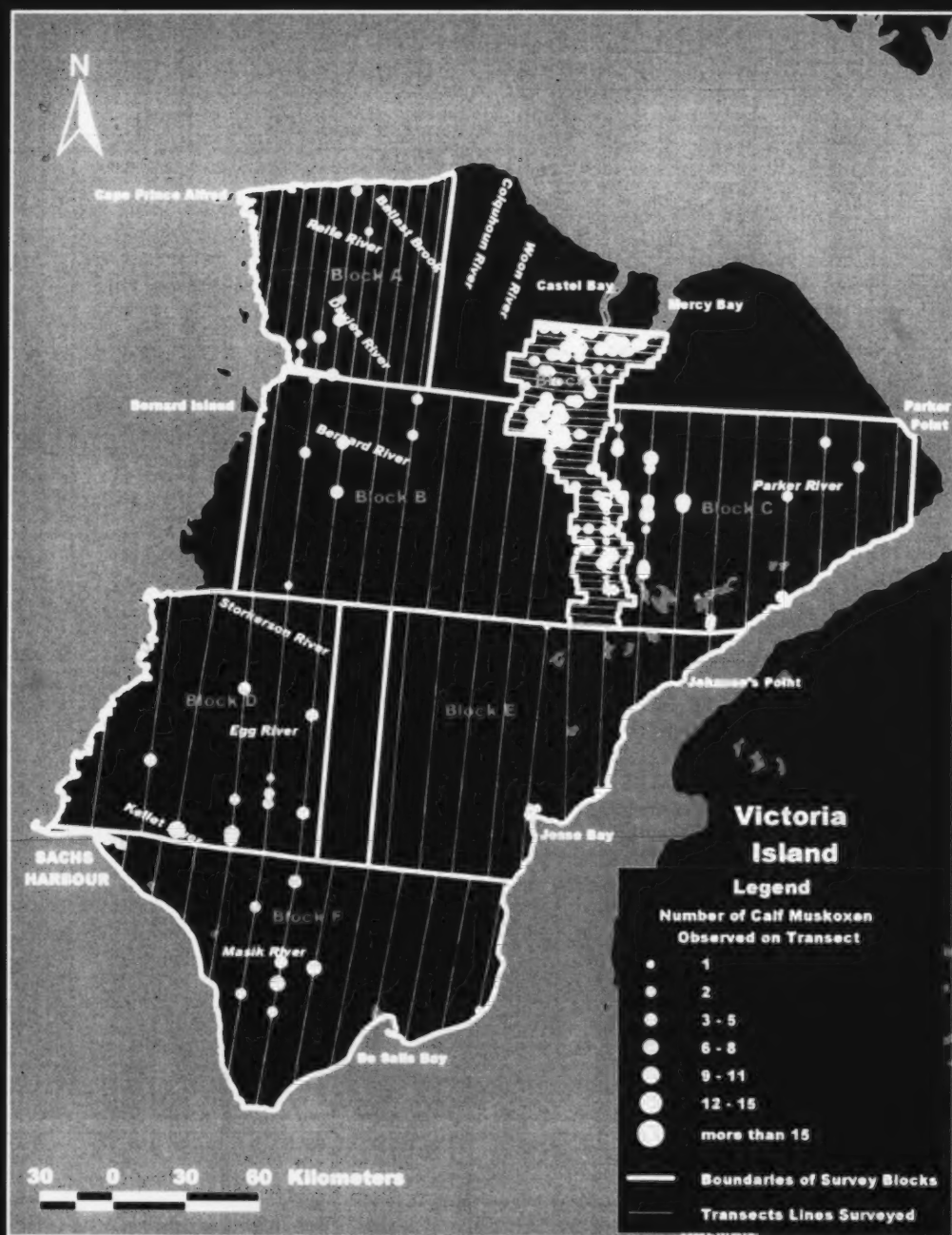
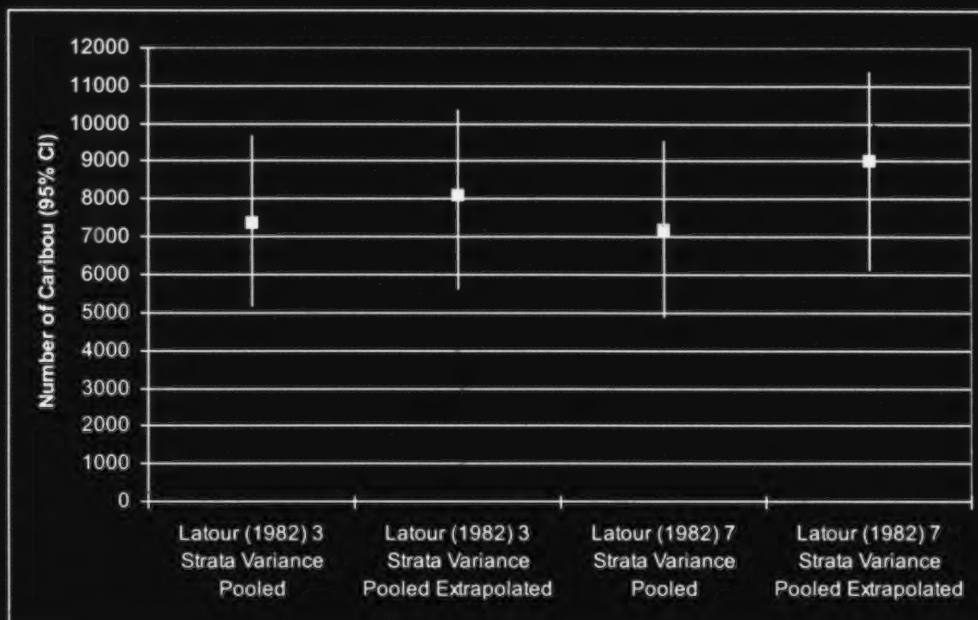


Figure 5. Distribution of calf muskoxen during 4 to 10 July 1982 based on (Latour 1985).





**Figure 5.** Distribution of calf muskoxen during 4 to 10 July 1982 based on (Latour 1985).

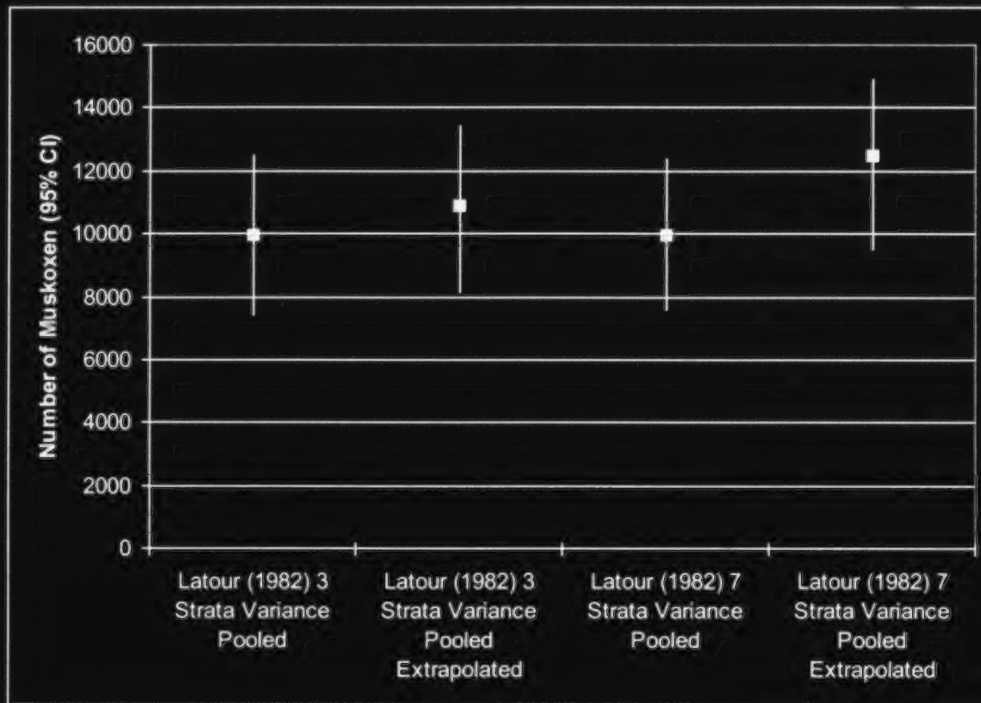


**Figure 6.** Population estimates (95 percent confidence intervals) for Peary caribou derived by re-analyzing (Latour 1985) survey data<sup>1</sup>.

<sup>1</sup> The following analyses were completed:

- Latour (1985) 3 strata variance pooled: Latour (1985) surveyed 7 blocks but analyzed the data as 3 blocks by pooling the data for blocks in the southern portion of the island. We combined the population and population variance estimates for these blocks as given in Table 1 to derive an overall population and population variance estimate and the associated SE and 95% confidence intervals for non-calf caribou.
- Latour (1985) 3 strata variance pooled extrapolated: based on Latour's (1985) area estimates, 64,507 km<sup>2</sup> or 91.4% of Banks Island was surveyed. We divided the mean population estimate and associated upper and lower 95% confidence intervals by 0.914 to derived a non-calf caribou population estimate for the island (70,582 km<sup>2</sup>).
- Latour (1985) 7 strata variance pooled: Latour (1985) surveyed 7 blocks but pooled the data for blocks in the central and southern portion of the island. We analyzed the data for each of the 7 survey blocks separately using Aerial2 Version 3 (Krebs 1999) and combined the population and population variance estimates for these blocks to derive an overall population and population variance estimate and associated SE and 95% confidence intervals for non-calf, calf, and all caribou.
- Latour (1985) 7 strata variance pooled extrapolated: based on our area estimates, 56,333 km<sup>2</sup> or 79.8% of Banks Island was surveyed. We divided the mean population estimate and associated upper and lower 95% confidence intervals by 0.798 to derived a non-calf caribou population estimate for the island (70,582 km<sup>2</sup>).





**Figure 7.** Population estimates (95 percent confidence intervals) for muskoxen derived by re-analyzing Latour's (1985) survey data<sup>1</sup>.

<sup>1</sup> The following analyses were completed:

- Latour (1985) 3 strata variance pooled: Latour (1985) surveyed 7 blocks but analyzed the data as 3 blocks by pooling the data for blocks in the southern portion of the island. We combined the population and population variance estimates for these blocks as given in Table 1 to derive an overall population and population variance estimate and the associated SE and 95% confidence intervals for non-calf caribou.
- Latour (1985) 3 strata variance pooled extrapolated: based on Latour's (1985) area estimates, 64,507 km<sup>2</sup> or 91.4% of Banks Island was surveyed. We divided the mean population estimate and associated upper and lower 95% confidence intervals by 0.914 to derived a non-calf caribou population estimate for the island (70,582 km<sup>2</sup>).
- Latour (1985) 7 strata variance pooled: Latour (1985) surveyed 7 blocks but pooled the data for blocks in the central and southern portion of the island. We analyzed the data for each of the 7 survey blocks separately using Aerial2 Version 3 (Krebs, 1999) and combined the population and population variance estimates for these blocks to derive an overall population and population variance estimate and associated SE and 95% confidence intervals for non-calf, calf, and all caribou.
- Latour (1985) 7 strata variance pooled extrapolated: based on our area estimates, 56,333 km<sup>2</sup> or 79.8% of Banks Island was surveyed. We divided the mean population estimate and associated upper and lower 95% confidence intervals by 0.798 to derived a non-calf caribou population estimate for the island (70,582 km<sup>2</sup>).



**Table 1.** Population estimates for Peary caribou on Banks Island in 1982 based on a re-analysis of data for 3 strata as presented in Appendix A by Latour (1985).

Stratum	Census Area (km <sup>2</sup> )	Number of Transects Flown	Number of Possible Transects	Density (per km <sup>2</sup> )	Population Total	Variance of Totals	S.E. of Y	95% Confidence Interval (+)	% of Total Area Sampled	Number On Transect	Number Off Transect	Coefficient Of Variation	df
Caribou: Non-calf													
1	3232	35	58	0.043	140	832.0	28.8	59	60.7	85	not recorded	0.206	
2	5520	11	43	0.580	3204	383715.6	619.4	1380	27.87	893	not recorded	0.193	
3	55755	47	461	0.073	4047	887905.3	942.3	1897	11.64	471	not recorded	0.233	
sum of blocks	64507	93	562	0.115	7391	1272452.8	1128.0	2272	13.02	1449		0.153	46
Muskox: Non-calf													
1	3232	35	58	0.925	2990	53580.9	231.5	470	60.7	1815	not recorded	0.077	
2	5520	11	43	0.150	825	74406.5	272.8	608	27.87	230	not recorded	0.331	
3	55755	47	461	0.110	6109	1474896.5	1214.5	2445	11.64	711	not recorded	0.199	
sum of blocks	64507	93	562	0.154	9925	1602883.9	1266.1	2550	13.02	2756		0.128	46

**Table 2.** Population estimates for Peary caribou on Banks Island in 1982 based an analysis data for 7 strata using Latour's (1985) original field data.

Stratum	Census Area (km <sup>2</sup> )	Number of Transects Flown	Number of Possible Transects	Density (per km <sup>2</sup> )	Population Total	Variance of Totals	S.E. of Y	95% Confidence Interval (+)	% of Total Area Sampled	Number On Transect	Number Off Transect	Coefficient Of Variation	df
Caribou: Non-calf													
A	5521	11	48.0	0.642	3544	478404.7	691.7	1541	25.2	893	not recorded	0.195	
B	10816	9	78.9	0.062	669	73010.5	270.2	623	12.4	83	not recorded	0.404	
C	8570	9	72.0	0.099	845	76131.1	275.9	636	12.9	109	not recorded	0.326	
D	8733	6	61.1	0.002	18	135.9	11.7	30	11.2	2	not recorded	0.653	
E	9510	10	80.0	0.158	1501	311928.5	558.5	1263	13.5	202	not recorded	0.372	
F	9786	12	112.6	0.050	484	125589.7	354.4	780	13.4	65	not recorded	0.732	
G	3397	35	68.0	0.044	151	1384.9	37.2	76	52.4	79	not recorded	0.247	
sum of blocks	56333	92	520.6	0.128	7212	1066585.2	1032.8	2336	13.0	1433		0.143	9
Caribou: Calf													
A	5521	11	48.0	0.106	587	50770.8	225.3	502	25.2	148	not recorded	0.384	
B	10816	9	78.9	0.004	40	1071.6	32.7	75	12.4	5	not recorded	0.813	
C	8570	9	72.0	0.022	186	9723.5	98.6	227	12.9	24	not recorded	0.530	
D	8733	6	61.1	0.000					11.2	0	not recorded		
E	9510	10	80.0	0.068	646	100046.2	316.3	715	13.5	87	not recorded	0.489	
F	9786	12	112.6	0.014	134	17548.0	132.5	292	13.4	18	not recorded	0.987	
G	3397	35	68.0	0.006	21	68.6	8.3	17	52.4	18	not recorded	0.394	
sum of blocks	56333	92	520.6	0.029	1615	179228.7	423.4	958	13.0	300		0.262	9
Caribou: Total													
A	5521	11	48.0	0.748	4132	702098.6	837.9	1867	25.2	1041	not recorded	0.203	
B	10816	9	78.9	0.066	709	91488.7	302.5	698	12.4	88	not recorded	0.427	
C	8570	9	72.0	0.120	1031	135413.0	368.0	849	12.9	133	not recorded	0.357	
D	8733	6	61.1	0.002	18	135.9	11.7	30	11.2	2	not recorded	0.653	
E	9510	10	80.0	0.226	2147	731032.4	855.0	1934	13.5	289	not recorded	0.398	
F	9786	12	112.6	0.063	619	235406.3	485.2	1068	13.4	83	not recorded	0.784	
G	3397	35	68.0	0.051	172	1994.7	44.7	91	52.4	90	not recorded	0.260	
sum of blocks	56333	92	520.6	0.157	8827	1897569.5	1377.5	3116	13.0	1726		0.156	9

**Table 3.** Population estimates for muskox on Banks Island in 1982 based on an analysis data for 7 strata using Latour's (1985) original field data.

Stratum	Census Area (km <sup>2</sup> )	Number of Transects Flown	Number of Possible Transects	Density (per km <sup>2</sup> )	Population Total	Variance of Totals	S.E. of Y	95% Confidence Interval (+)	% of Total Area Sampled	Number On Transect	Number Off Transect	Coefficient of Variation	df
Muskox: Non-calf													
A	5521	11	48.0	0.165	913	96082.6	310.0	691	25.2	230	not recorded	0.340	
B	10816	9	78.9	0.100	1080	157523.4	396.9	915	12.4	134	not recorded	0.368	
C	8570	9	72.0	0.251	2148	318159.9	564.1	1301	12.9	277	not recorded	0.263	
D	8733	6	61.1	0.164	1436	223401.7	472.7	1215	11.2	161	not recorded	0.329	
E	9510	10	80.0	0.006	59	2153.2	46.4	105	13.5	8	not recorded	0.781	
F	9786	12	112.6	0.088	857	173958.3	417.1	918	13.4	115	not recorded	0.487	
G	3397	35	68.0	1.021	3468	86397.8	293.9	597	52.4	1816	not recorded	0.085	
sum of blocks	56333	92	520.6	0.177	9961	1057676.9	1028.4	2432	13.0	2741		0.103	8
Muskox: Calf													
A	5521	11	48.0	0.013	71	1727.8	41.6	93	25.2	18	not recorded	0.582	
B	10816	9	78.9	0.127	137	4330.1	65.8	152	12.4	17	not recorded	0.480	
C	8570	9	72.0	0.057	489	37205.7	192.9	445	12.9	63	not recorded	0.395	
D	8733	6	61.1	0.043	375	14598.9	120.8	311	11.2	42	not recorded	0.323	
E	9510	10	80.0	0.002	15	97.9	9.9	22	13.5	2	not recorded	0.666	
F	9786	12	112.6	0.021	209	16910.4	130.0	286	13.4	28	not recorded	0.623	
G	3397	35	68.0	0.118	401	1714.0	41.4	84	52.4	210	not recorded	0.103	
sum of blocks	56333	92	520.6	0.030	1696	76584.9	276.7	638	13.0	380		0.163	8
Muskox: Total													
A	5521	11	48.0	0.178	984	119864.3	346.2	771	25.2	248	not recorded	0.352	
B	10816	9	78.9	0.113	1217	210516.4	458.8	1058	12.4	151	not recorded	0.377	
C	8570	9	72.0	0.308	2636	516102.4	718.4	1657	12.9	340	not recorded	0.272	
D	8733	6	61.1	0.207	1810	339425.9	582.6	1498	11.2	203	not recorded	0.322	
E	9510	10	80.0	0.008	74	3056.6	55.3	125	13.5	10	not recorded	0.744	
F	9786	12	112.6	0.109	1066	294588.8	542.8	1195	13.4	143	not recorded	0.509	
G	3397	35	68.0	1.139	3869	105890.1	325.4	661	52.4	2026	not recorded	0.084	
sum of blocks	56333	92	520.6	0.207	11657	1589444.5	1260.7	2981	13.0	3121		0.108	8

**Table 4.** Comparison of area and population estimates

Species	Estimates based on Latour (1985)	Area (km <sup>2</sup> )	Population Estimate	Lower 95 Percent Confidence Interval	Upper 95 Percent Confidence Interval
Caribou	a) 3 Strata Variance Pooled (estimate for area surveyed)	64507	7391	5119	9663
	b) 3 Strata Variance Pooled (extrapolated to island)	70582	8087	5601	10359
	c) 7 Strata Variance Pooled (estimate for area surveyed)	56333	7212	4876	9548
	d) 7 Strata Variance Pooled (extrapolated to island)	70582	9036	6109	11372
	difference c minus a	-8174	-179	-243	-115
	difference d minus b		949	508	1013
Muskox	e) 3 Strata Variance Pooled (estimate for area surveyed)	64507	9925	7375	12475
	f) 3 Strata Variance Pooled (extrapolated to island)	70582	10860	8070	13410
	g) 7 Strata Variance Pooled (estimate for area surveyed)	56333	9961	7529	12393
	h) 7 Strata Variance Pooled (extrapolated to island)	70582	12481	9433	14913
	difference g minus e	-8174	36	154	-82
	difference h minus f		1621	1364	1503

## APPENDIX A.

Transect data for the 1982 Banks Island caribou and muskox survey based on Latour (1985).

Survey Block	Transect Number	Transect		Caribou: Non-calf	Caribou: Calf	Muskox: Non-calf	Muskox: Calf
		Length (km)	Area (km <sup>2</sup> )				
A	A01	34.2	59.8	0	0	0	0
	A02	57.4	100.4	11	0	0	0
	A03	63.6	111.3	20	2	2	0
	A04	75.8	132.7	109	2	40	3
	A05	76.5	133.9	43	3	30	3
	A06	78.9	138.1	153	15	77	11
	A07	79.6	139.3	147	11	49	1
	A08	80.2	140.3	133	62	10	0
	A09	80.8	141.4	175	33	21	0
	A10	82.4	144.2	56	11	0	0
	A11	85.6	149.7	46	9	1	0
	Total	795.0	1391.2	893	148	230	18
B	GFE01	68.4	119.6	3	0	19	1
	GFE02	75.0	131.3	2	0	2	0
	GFE03	88.5	154.8	4	0	2	0
	GFE04	88.7	155.3	5	0	0	0
	GFE05	89.2	156.1	3	0	35	4
	GFE06	89.6	156.8	37	4	8	0
	GFE07	90.1	157.6	9	0	42	7
	GFE08	90.4	158.3	5	0	26	5
	GFE09	87.3	152.7	15	1	0	0
	Total	767.1	1342.5	83	5	134	17
C	DE01	31.4	54.9	0	0	38	11
	DE02	89.8	157.1	4	1	83	28
	DE03	89.8	157.2	8	0	18	11
	DE04	89.7	157.0	34	12	19	4
	DE05	87.8	153.6	36	10	13	0
	DE06	77.5	135.7	18	1	10	5
	DE07	65.1	113.9	1	0	46	2
	DE08	54.1	94.6	0	0	35	2
	DE09	46.4	81.2	8	0	15	0
	Total	631.6	1105.3	109	24	277	63
D	HJL03	104.4	182.8	1	0	18	7
	HJL04	103.8	181.6	1	0	34	5
	HJL05	103.6	181.3	0	0	59	17
	HJL06	102.8	179.9	0	0	45	10
	HJL07	97.5	170.6	0	0	4	3
	HJL08	47.4	83.0	0	0	1	0
	Total	559.5	979.2	2	0	161	42

Survey Block	Transect Number	Transect		Caribou: Non-calf	Caribou: Calf	Muskox: Non-calf	Muskox: Calf
		Length (km)	Area (km <sup>2</sup> )				
E	I01	8.7	15.2	1	0	0	0
	I02	21.2	37.0	3	2	0	0
	I03	32.2	56.3	19	6	0	0
	I04	68.5	119.8	66	43	6	1
	I05	79.6	139.3	32	5	0	0
	I06	101.1	176.9	50	16	2	1
	I07	105.2	184.0	22	9	0	0
	I08	105.0	183.7	6	4	0	0
	I09	105.2	184.1	2	2	0	0
	I10	105.1	183.9	1	0	0	0
	Total	731.6	1280.3	202	87	8	2
F	KL01	55.6	97.4	6	0	9	1
	KL02	63.6	111.3	41	15	3	0
	KL03	69.5	121.7	7	2	0	0
	KL04	63.0	110.2	0	0	8	0
	KL05	83.7	146.4	0	0	4	0
	KL06	92.4	161.8	6	0	15	7
	KL07	102.2	178.9	5	1	57	16
	KL08	91.9	160.9	0	0	16	4
	KL09	54.5	95.4	0	0	3	0
	KL10	32.7	57.3	0	0	0	0
	KL11	25.0	43.7	0	0	0	0
	KL12	16.1	28.1	0	0	0	0
	Total	750.3	1313.0	65	18	115	28
G	T01	53.1	93.0	0	0	111	16
	T02	52.6	92.0	0	0	163	23
	T03	53.5	93.6	1	0	161	26
	T04	51.7	90.5	0	0	147	13
	T05	48.0	84.0	3	0	72	5
	T06	46.2	80.8	0	0	61	8
	T07	43.1	75.5	5	0	51	3
	T08	36.5	63.9	2	0	90	4
	T09	36.2	63.4	0	0	58	9
	T10	38.1	66.7	4	0	166	8
	T11	41.2	72.1	0	0	136	17
	T12	39.7	69.5	0	0	73	7
	T13	39.0	68.3	1	0	102	19
	T14	19.7	34.4	0	0	97	9
	T15	18.2	31.8	0	0	44	0
	T16	19.9	34.8	1	0	26	3
	T17	19.5	34.2	2	0	5	2
	T18	19.2	33.6	1	0	1	0
	T19	19.8	34.7	0	0	24	2
	T20	20.1	35.2	0	0	31	6



Survey Block	Transect Number	Transect		Caribou: Non-calf	Caribou: Calf	Muskox: Non-calf	Muskox: Calf
		Length (km)	Area (km <sup>2</sup> )				
	T21	20.0	35.0	1	0	31	3
	T22	20.1	35.2	0	0	29	0
	T23	20.0	35.0	2	0	2	0
	T24	19.4	33.9	0	0	32	6
	T25	20.0	35.1	2	1	1	0
	T26	20.0	35.0	1	0	15	6
	T27	20.9	36.6	0	0	44	7
	T28	19.9	34.9	21	4	15	4
	T29	20.2	35.4	0	0	5	0
	T30	19.7	34.5	13	2	2	0
	T31	20.2	35.4	1	0	21	4
	T32	19.7	34.5	6	0	0	0
	T33	20.6	36.1	2	0	0	0
	T34	20.1	35.2	0	0	0	0
	T35	20.0	35.0	10	4	0	0
	Total	1016.3	1778.6	79	11	1816	210

## APPENDIX B.

Data associated with sighting of Peary Caribou made during the 1982 survey of Banks Island based on Latour (1985).

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total	Cows	Bulls
4-Jul-82	A	74.1380	124.1925	A02	A02.01	R	1		1		
4-Jul-82	A	74.3425	124.2009	A02	A02.02	L	1		1		1
4-Jul-82	A	74.1564	124.1929	A02	A02.04	L	1		1		1
4-Jul-82	A	73.9039	124.1798	A02	A02.06	L	7		7		
4-Jul-82	A	73.8886	124.1806	A02	A02.08	L	1		1		
4-Jul-82	A	73.9069	123.8949	A03	A03.01	R	5		5		
4-Jul-82	A	73.8507	123.8944	A03	A03.02	L	1		1		1
4-Jul-82	A	73.8507	123.8944	A03	A03.02	L	4		4	4	
4-Jul-82	A	74.0071	123.8997	A03	A03.03	R	1		1		
4-Jul-82	A	73.8952	123.8972	A03	A03.04	L	1	2	3	1	
4-Jul-82	A	74.1513	123.9056	A03	A03.05	R	2		2		
4-Jul-82	A	73.9298	123.8965	A03	A03.06	L	2		2		2
4-Jul-82	A	74.1913	123.9069	A03	A03.08	L	1		1	1	
4-Jul-82	A	74.1805	123.9063	A03	A03.09	R	1		1		
4-Jul-82	A	74.2951	123.9115	A03	A03.11	R	2		2		
4-Jul-82	A	74.2546	123.6877	A04	A04.01	R	3		3		
4-Jul-82	A	74.3934	123.6949	A04	A04.02	L	2		2		2
4-Jul-82	A	74.1778	123.6840	A04	A04.03	R	1		1		
4-Jul-82	A	74.2461	123.6863	A04	A04.04	L	3	1	4	3	
4-Jul-82	A	74.2084	123.6847	A04	A04.06	L	20		20		
4-Jul-82	A	74.1459	123.6828	A04	A04.07	R	1		1		
4-Jul-82	A	74.1859	123.6835	A04	A04.08	L	9		9		
4-Jul-82	A	74.1042	123.6798	A04	A04.09	R	1		1		
4-Jul-82	A	74.1576	123.6836	A04	A04.10	L	10		10		
4-Jul-82	A	74.1298	123.6805	A04	A04.12	L	30		30		
4-Jul-82	A	74.0764	123.6784	A04	A04.14	L	7		7		
4-Jul-82	A	74.0359	123.6775	A04	A04.16	L	2		2		2
4-Jul-82	A	73.9245	123.6735	A04	A04.17	R	1		1		
4-Jul-82	A	73.8815	123.6701	A04	A04.19	R	7		7		
4-Jul-82	A	73.8626	123.6701	A04	A04.21	R	3		3		
4-Jul-82	A	73.9331	123.6715	A04	A04.22	L	3	1	4	3	
4-Jul-82	A	73.8931	123.6708	A04	A04.24	L	3		3		3
4-Jul-82	A	74.0240	123.2205	A04	A04.26	L	2		2		
4-Jul-82	A	73.7611	123.6647	A04	A04.32	L	1		1		1
4-Jul-82	A	73.9052	123.4476	A05	A05.03	R	3		3		
4-Jul-82	A	74.0775	123.4556	A05	A05.05	R	3		3		
4-Jul-82	A	73.9625	123.4535	A05	A05.06	L	3		3		3
4-Jul-82	A	74.1198	123.4566	A05	A05.07	R	4		4		
4-Jul-82	A	74.1350	123.4584	A05	A05.09	R	1	1	2	1	
4-Jul-82	A	74.2041	123.4617	A05	A05.11	R	11		11		
4-Jul-82	A	74.3012	123.4628	A05	A05.13	R	2		2		
4-Jul-82	A	74.2140	123.4617	A05	A05.14	L	2	2	4	2	
4-Jul-82	A	74.4045	123.4661	A05	A05.15	R	2		2		
4-Jul-82	A	74.2562	123.4626	A05	A05.16	L	12		12		

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total	Cows	Bulls
4-Jul-82	A	74.1493	123.2193	A06	A06.06	L	20		20		
4-Jul-82	A	74.1408	123.2183	A06	A06.08	L	30		30		
4-Jul-82	A	74.2338	123.2200	A06	A06.09	R	7	4	11	7	
4-Jul-82	A	74.1358	123.2216	A06	A06.10	L	20		20		
4-Jul-82	A	74.1821	123.2199	A06	A06.11	R	5	1	6		
4-Jul-82	A	74.1556	123.2213	A06	A06.13	R	5	1	6		
4-Jul-82	A	74.0995	123.2199	A06	A06.14	L	1		1		1
4-Jul-82	A	74.0779	123.2196	A06	A06.16	L	18		18		
4-Jul-82	A	74.0676	123.2196	A06	A06.18	L	5	3	8		
4-Jul-82	A	73.8955	123.2206	A06	A06.21	R	6		6		
4-Jul-82	A	74.0446	123.2205	A06	A06.22	L	2	2	4	2	
4-Jul-82	A	74.0307	123.2210	A06	A06.24	L	2		2		
4-Jul-82	A	73.8515	123.2197	A06	A06.25	R	2		2		
4-Jul-82	A	74.0240	123.2205	A06	A06.26	L	1		1		1
4-Jul-82	A	73.7904	123.2200	A06	A06.29	R	1		1		
4-Jul-82	A	74.0042	123.2207	A06	A06.30	R	1		1		
4-Jul-82	A	73.9966	123.2200	A06	A06.32	L	1		1		1
4-Jul-82	A	73.9324	123.2192	A06	A06.36	L	14		14		
4-Jul-82	A	73.9027	123.2212	A06	A06.38	L	1		1		1
4-Jul-82	A	73.9027	123.2212	A06	A06.38	L	3		3	3	
4-Jul-82	A	73.8474	123.2217	A06	A06.40	L	8	4	12	8	
4-Jul-82	A	73.7691	122.9800	A07	A07.01	R	1		1		
4-Jul-82	A	74.0493	122.9830	A07	A07.05	R	1		1		
4-Jul-82	A	74.0695	122.9842	A07	A07.07	R	1		1		
4-Jul-82	A	74.1202	122.9832	A07	A07.09	R	25		25		
4-Jul-82	A	73.9524	122.9798	A07	A07.10	L	1	1	2		
4-Jul-82	A	74.1414	122.9831	A07	A07.11	R	11		11		
4-Jul-82	A	74.0179	122.9816	A07	A07.12	L	10	6	16		
4-Jul-82	A	74.1526	122.9832	A07	A07.13	R	20		20		
4-Jul-82	A	74.2168	122.9846	A07	A07.14	L	4	4	8		
4-Jul-82	A	74.1615	122.9843	A07	A07.15	R	8		8		
4-Jul-82	A	74.2729	122.9837	A07	A07.16	L	26		26		
4-Jul-82	A	74.1813	122.9837	A07	A07.17	R	10		10		
4-Jul-82	A	74.1939	122.9842	A07	A07.19	R	2		2		
4-Jul-82	A	74.2109	122.9845	A07	A07.21	R	6		6		
4-Jul-82	A	74.2581	122.9841	A07	A07.23	R	21		21		
4-Jul-82	A	74.2745	122.7486	A08	A08.02	L	1		1		1
4-Jul-82	A	74.2795	122.7484	A08	A08.03	R	1		1		
4-Jul-82	A	74.2606	122.7495	A08	A08.05	R	8	8	16		
4-Jul-82	A	74.1802	122.7508	A08	A08.06	L	14	11	25		
4-Jul-82	A	74.1730	122.7520	A08	A08.08	L	2	1	3	2	
4-Jul-82	A	74.1905	122.7505	A08	A08.09	R	1	1	2		
4-Jul-82	A	74.1905	122.7505	A08	A08.09	R	8	8	16		
4-Jul-82	A	74.1200	122.7530	A08	A08.10	L	7	4	11	7	
4-Jul-82	A	74.1766	122.7514	A08	A08.11	R	5	5	10		
4-Jul-82	A	74.1766	122.7514	A08	A08.11	L	20		20		
4-Jul-82	A	74.0391	122.7559	A08	A08.14	L	19		19		
4-Jul-82	A	74.1240	122.7542	A08	A08.15	R	4	3	7		
4-Jul-82	A	74.0184	122.7597	A08	A08.16	L	1		1		1
4-Jul-82	A	74.1069	122.7542	A08	A08.17	R	12	8	20		

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total	Cows	Bulls
4-Jul-82	A	73.9510	122.7598	A08	A08.18	L	1		1		1
4-Jul-82	A	74.0350	122.7579	A08	A08.19	R	4	1	5		
4-Jul-82	A	73.9222	122.7613	A08	A08.20	L	8	4	12	8	
4-Jul-82	A	73.9362	122.7604	A08	A08.21	R	9	8	17		
4-Jul-82	A	73.8953	122.7617	A08	A08.22	L	1		1		1
4-Jul-82	A	73.7560	122.7655	A08	A08.25	R	7		7		
4-Jul-82	A	73.8411	122.5281	A09	A09.01	R	2		2		
4-Jul-82	A	73.7490	122.5321	A09	A09.02	L	25		25		
4-Jul-82	A	73.9021	122.5285	A09	A09.03	R	9	6	15		
4-Jul-82	A	73.9389	122.5288	A09	A09.05	R	7	6	13		
4-Jul-82	A	73.9137	122.5301	A09	A09.06	L	11		11		
4-Jul-82	A	74.0561	122.5267	A09	A09.07	R	1		1		
4-Jul-82	A	74.0422	122.5262	A09	A09.08	L	1		1		1
4-Jul-82	A	74.0705	122.5258	A09	A09.09	R	7	2	9		
4-Jul-82	A	74.0624	122.5268	A09	A09.10	L	42		42		
4-Jul-82	A	74.1019	122.5246	A09	A09.11	R	1		1		
4-Jul-82	A	74.1414	122.5257	A09	A09.13	R	1		1		
4-Jul-82	A	74.1517	122.5236	A09	A09.15	R	8	7	15		
4-Jul-82	A	74.1849	122.5246	A09	A09.15	R	9	7	16		
4-Jul-82	A	74.1149	122.5249	A09	A09.16	L	30		30		
4-Jul-82	A	74.2936	122.5217	A09	A09.17	R	1	1	2		
4-Jul-82	A	74.1302	122.5259	A09	A09.18	L	1		1		1
4-Jul-82	A	74.1441	122.5248	A09	A09.20	L	10		10		
4-Jul-82	A	74.2518	122.5233	A09	A09.22	L	4	2	6	4	
4-Jul-82	A	74.3089	122.5226	A09	A09.24	L	5	2	7	5	
4-Jul-82	A	74.4716	122.2832	A10	A10.01	R	3		3		
4-Jul-82	A	74.4518	122.2846	A10	A10.03	R	1		1		
4-Jul-82	A	74.1337	122.3066	A10	A10.04	L	11	0	11	11	
4-Jul-82	A	74.3237	122.2940	A10	A10.05	R	4	3	7		
4-Jul-82	A	74.0721	122.3101	A10	A10.06	L	2		2		2
4-Jul-82	A	74.0784	122.3085	A10	A10.07	R	18	8	26		
4-Jul-82	A	73.9630	122.3142	A10	A10.08	L	1		1		1
4-Jul-82	A	73.7761	122.3255	A10	A10.09	R	2		2		
4-Jul-82	A	73.9432	122.3155	A10	A10.10	L	4		4		4
4-Jul-82	A	73.7653	122.3259	A10	A10.11	R	3		3		
4-Jul-82	A	73.7510	122.3254	A10	A10.13	R	7		7		
4-Jul-82	A	73.7659	122.0930	A11	A11.01	R	5		5		
4-Jul-82	A	73.7802	122.0933	A11	A11.02	L	1		1		1
4-Jul-82	A	73.7978	122.0912	A11	A11.03	R	3		3		
4-Jul-82	A	73.8440	122.0896	A11	A11.06	L	6	1	7	6	
4-Jul-82	A	74.4376	122.0615	A11	A11.07	R	10	2	12		
4-Jul-82	A	73.9055	122.0885	A11	A11.08	L	9		9		
4-Jul-82	A	74.0330	122.0810	A11	A11.10	L	4	2	6	4	
4-Jul-82	A	74.2818	122.0689	A11	A11.12	L	6	4	10	6	
4-Jul-82	A	74.4649	122.0617	A11	A11.14	L	2		2		2
8-Jul-82	C	73.5744	119.0508	DE02	DE02.01	R	1	0	1		
8-Jul-82	C	73.1282	119.0485	DE02	DE02.16	L	3	1	4		
8-Jul-82	C	73.2892	118.6140	DE03	DE03.01	R	2	0	2		
8-Jul-82	C	72.9764	118.6260	DE03	DE03.02	L	2	0	2		
8-Jul-82	C	73.2333	118.6151	DE03	DE03.04	L	2	0	2		

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total	Cows	Bulls
8-Jul-82	C	73.2941	118.6141	DE03	DE03.06	L	1	0	1		
8-Jul-82	C	73.3407	118.6111	DE03	DE03.08	L	1	0	1		
8-Jul-82	C	73.7448	118.1518	DE04	DE04.01	R	6	2	8		
8-Jul-82	C	73.7345	118.1517	DE04	DE04.02	L	9	5	14		
8-Jul-82	C	73.7385	118.1501	DE04	DE04.03	R	6	1	7		
8-Jul-82	C	73.7219	118.1516	DE04	DE04.04	L	4	1	5		
8-Jul-82	C	73.3881	118.1643	DE04	DE04.06	L	2	3	5		
8-Jul-82	C	73.2619	118.1709	DE04	DE04.08	L	1	0	1		
8-Jul-82	C	73.3370	118.1670	DE04	DE04.09	R	5	0	5		
8-Jul-82	C	73.2516	118.1708	DE04	DE04.11	R	1	0	1		
8-Jul-82	C	73.2622	117.7444	DE05	DE05.04	L	1	1	2		
8-Jul-82	C	73.4569	117.7320	DE05	DE05.05	R	3	0	3		
8-Jul-82	C	73.4256	117.7372	DE05	DE05.06	L	9	8	17		
8-Jul-82	C	73.4681	117.7334	DE05	DE05.07	R	3	0	3		
8-Jul-82	C	73.4793	117.7348	DE05	DE05.09	R	3	0	3		
8-Jul-82	C	73.5213	117.7310	DE05	DE05.11	R	2	0	2		
8-Jul-82	C	73.5365	117.7308	DE05	DE05.13	R	5	0	5		
8-Jul-82	C	73.5723	117.7255	DE05	DE05.15	R	10	1	11		
8-Jul-82	C	73.5454	117.2875	DE06	DE06.01	R	2	0	2		
8-Jul-82	C	73.6210	117.2843	DE06	DE06.02	L	3	1	4		
8-Jul-82	C	73.4630	117.2910	DE06	DE06.03	R	3	0	3		
8-Jul-82	C	73.4679	117.2923	DE06	DE06.04	L	5	0	5		
8-Jul-82	C	73.1664	117.3124	DE06	DE06.07	R	4	0	4		
8-Jul-82	C	73.3266	117.3013	DE06	DE06.08	L	1	0	1		
8-Jul-82	C	73.5287	116.8471	DE07	DE07.09	R	1	0	1		
8-Jul-82	C	73.5661	115.9347	DE09	DE09.02	L	2	0	2		
8-Jul-82	C	73.7172	115.9161	DE09	DE09.04	L	3	0	3		
8-Jul-82	C	73.6121	115.9275	DE09	DE09.05	R	2	0	2		
8-Jul-82	C	73.6993	115.9167	DE09	DE09.09	R	1	0	1		
5-Jul-82	B	73.2001	120.4091	GFE01	GFE01.15	R	1		1		
5-Jul-82	B	73.4244	120.3809	GFE01	GFE01.16	L	1		1		1
5-Jul-82	B	73.1432	120.4151	GFE01	GFE01.17	R	1		1		
5-Jul-82	B	73.3424	120.8188	GFE02	GFE02.02	L	1		1		1
5-Jul-82	B	73.3769	120.8135	GFE02	GFE02.03	R	1		1		
5-Jul-82	B	73.5609	121.2342	GFE03	GFE03.05	R	3		3		
5-Jul-82	B	73.1822	121.2613	GFE03	GFE03.07	R	1		1		
5-Jul-82	B	73.6248	121.6637	GFE04	GFE04.01	R	1		1		
5-Jul-82	B	73.6781	121.6625	GFE04	GFE04.02	L	1		1		1
5-Jul-82	B	73.6508	121.6629	GFE04	GFE04.03	R	1		1		
5-Jul-82	B	73.6889	121.6632	GFE04	GFE04.04	L	1		1		1
5-Jul-82	B	73.6719	121.6611	GFE04	GFE04.05	R	1		1		
5-Jul-82	B	73.3376	122.1100	GFE05	GFE05.05	R	1		1		
5-Jul-82	B	73.3318	122.1102	GFE05	GFE05.06	L	1		1		1
5-Jul-82	B	73.2698	122.1126	GFE05	GFE05.08	L	1		1		1
5-Jul-82	B	73.1488	122.5397	GFE06	GFE06.01	R	3	2	5	2	
5-Jul-82	B	73.1155	122.5403	GFE06	GFE06.02	L	8		8		
5-Jul-82	B	73.6672	122.5341	GFE06	GFE06.03	R	2	2	4	2	
5-Jul-82	B	73.1272	122.5387	GFE06	GFE06.04	L	14		14		
5-Jul-82	B	73.6906	122.5324	GFE06	GFE06.05	R	2		2		
5-Jul-82	B	73.2466	122.5405	GFE06	GFE06.06	L	1		1		1

Date	Survey Block	Latitude	Longitude	Trans. Sect. Number	Observation Number	Observer	Adult	Calves	Total	Cows	Bulls
5-Jul-82	B	73.3413	122.5373	GFE06	GFE06.08	L	1		1		1
5-Jul-82	B	73.5757	122.5350	GFE06	GFE06.12	L	4		4		4
5-Jul-82	B	73.6619	122.5326	GFE06	GFE06.14	L	1		1		1
5-Jul-82	B	73.7243	122.5318	GFE06	GFE06.16	L	1		1		1
5-Jul-82	B	73.7161	122.9803	GFE07	GFE07.02	L	1		1		1
5-Jul-82	B	73.6407	122.9787	GFE07	GFE07.03	R	1		1		
5-Jul-82	B	73.0081	122.9741	GFE07	GFE07.07	R	1		1		
5-Jul-82	B	73.5289	122.9777	GFE07	GFE07.10	L	2		2		2
5-Jul-82	B	73.0903	122.9728	GFE07	GFE07.18	L	4		4		
5-Jul-82	B	73.1477	123.4223	GFE08	GFE08.03	R	1		1		
5-Jul-82	B	73.1765	123.4236	GFE08	GFE08.05	R	1		1		
5-Jul-82	B	73.2936	123.4308	GFE08	GFE08.06	L	2		2		2
5-Jul-82	B	73.4324	123.4323	GFE08	GFE08.10	L	1		1		1
5-Jul-82	B	73.6447	123.8814	GFE09	GFE09.01	R	2		2		
5-Jul-82	B	73.6397	123.8829	GFE09	GFE09.02	L	1		1		1
5-Jul-82	B	73.6397	123.8829	GFE09	GFE09.02	L	5		5		
5-Jul-82	B	73.6271	123.8817	GFE09	GFE09.04	L	1		1		1
5-Jul-82	B	73.6141	123.8803	GFE09	GFE09.06	L	1	1	2	1	
5-Jul-82	B	73.5280	123.8743	GFE09	GFE09.08	L	1		1		1
5-Jul-82	B	73.5280	123.8743	GFE09	GFE09.08	L	1		1	1	
5-Jul-82	B	73.4502	123.8727	GFE09	GFE09.10	L	1		1		1
5-Jul-82	B	73.4341	123.8703	GFE09	GFE09.12	L	1		1		1
5-Jul-82	B	73.4174	123.8709	GFE09	GFE09.14	L	1		1		1
9-Jul-82	E	72.4626	121.4650	I09	I09.01	R	1	1	2		
9-Jul-82	E	72.7703	121.4766	I09	I09.02	L	1	1	2		
9-Jul-82	E	72.3852	121.8687	I10	I10.01	R	1	0	1		
9-Jul-82	D	72.7550	122.9501	HJL03	HJL03.06	L	1	0	1		
9-Jul-82	D	72.6871	123.3742	HJL04	HJL04.02	L	1	0	1		
8-Jul-82	E	72.9065	118.1858	I01	I01.01	R	1	0	1		
8-Jul-82	E	72.8380	118.6363	I02	I02.01	R	3	2	5		
8-Jul-82	E	72.7548	119.0537	I03	I03.01	R	5	3	8		
8-Jul-82	E	72.7593	119.0525	I03	I03.02	L	3	0	3		
8-Jul-82	E	72.8130	119.0572	I03	I03.03	R	8	3	11		
8-Jul-82	E	72.8327	119.0568	I03	I03.05	R	2	0	2		
8-Jul-82	E	72.9209	119.0606	I03	I03.07	R	1	0	1		
8-Jul-82	E	72.7116	119.4570	I04	I04.03	R	1	0	1		
8-Jul-82	E	72.6253	119.4470	I04	I04.04	L	1	0	1		
8-Jul-82	E	72.5926	119.4459	I04	I04.05	R	5	3	8		
8-Jul-82	E	72.5743	119.4429	I04	I04.06	L	4	3	7		
8-Jul-82	E	72.5787	119.4433	I04	I04.07	R	2	0	2		
8-Jul-82	E	72.5595	119.4417	I04	I04.08	L	5	3	8		
8-Jul-82	E	72.5488	119.4409	I04	I04.09	R	15	8	23		
8-Jul-82	E	72.5447	119.4405	I04	I04.10	L	20	20	40		
8-Jul-82	E	72.5318	119.4395	I04	I04.11	R	4	2	6		
8-Jul-82	E	72.4597	119.4323	I04	I04.12	L	1	0	1		
8-Jul-82	E	72.5000	119.4384	I04	I04.13	R	5	3	8		
8-Jul-82	E	72.4275	119.4297	I04	I04.14	L	1	0	1		
8-Jul-82	E	72.4852	119.4343	I04	I04.15	R	1	1	2		
8-Jul-82	E	72.4374	119.4305	I04	I04.17	R	1	0	1		
8-Jul-82	E	72.2866	119.7975	I05	I05.01	R	8	2	10		



Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total	Cows	Bulls
8-Jul-82	E	72.3747	119.8166	I05	I05.02	L	1	0	1		
8-Jul-82	E	72.3286	119.8075	I05	I05.03	R	1	1	2		
8-Jul-82	E	72.4037	119.8209	I05	I05.04	L	1	0	1		
8-Jul-82	E	72.3581	119.8119	I05	I05.05	R	1	0	1		
8-Jul-82	E	72.4364	119.8272	I05	I05.06	L	1	0	1		
8-Jul-82	E	72.3684	119.8144	I05	I05.07	R	2	0	2		
8-Jul-82	E	72.4524	119.8303	I05	I05.08	L	1	0	1		
8-Jul-82	E	72.4636	119.8300	I05	I05.09	R	2	1	3		
8-Jul-82	E	72.8280	119.8965	I05	I05.11	R	5	1	6		
8-Jul-82	E	72.8114	119.8947	I05	I05.12	L	4	0	4		
8-Jul-82	E	72.8445	119.8998	I05	I05.13	R	1	0	1		
8-Jul-82	E	72.8338	119.8986	I05	I05.14	L	3	0	3		
8-Jul-82	E	72.8400	119.8993	I05	I05.16	L	1	0	1		
8-Jul-82	E	72.4945	120.2312	I06	I06.01	R	1	1	2		
8-Jul-82	E	72.4717	120.2314	I06	I06.03	R	1	0	1		
8-Jul-82	E	72.9235	120.1940	I06	I06.04	L	2	0	2		
8-Jul-82	E	72.4573	120.2341	I06	I06.05	R	1	0	1		
8-Jul-82	E	72.9114	120.1909	I06	I06.06	L	1	0	1		
8-Jul-82	E	72.3156	120.2448	I06	I06.07	R	10	4	14		
8-Jul-82	E	72.7456	120.2068	I06	I06.08	L	2	0	2		
8-Jul-82	E	72.1995	120.2555	I06	I06.09	R	16	8	24		
8-Jul-82	E	72.7281	120.2092	I06	I06.10	L	1	0	1		
8-Jul-82	E	72.0650	120.2653	I06	I06.11	R	7	1	8		
8-Jul-82	E	72.4900	120.2322	I06	I06.12	L	2	2	4		
8-Jul-82	E	72.0825	120.2631	I06	I06.14	L	6	0	6		
8-Jul-82	E	72.0818	120.6406	I07	I07.01	R	2	0	2		
8-Jul-82	E	72.0657	120.6413	I07	I07.02	L	8	6	14		
8-Jul-82	E	72.1939	120.6348	I07	I07.03	R	1	0	1		
8-Jul-82	E	72.2064	120.6366	I07	I07.04	L	4	0	4		
8-Jul-82	E	72.2118	120.6344	I07	I07.05	R	3	0	3		
8-Jul-82	E	72.3825	120.6325	I07	I07.06	L	1	0	1		
8-Jul-82	E	72.3628	120.6312	I07	I07.07	R	1	1	2		
8-Jul-82	E	72.5547	120.6248	I07	I07.08	L	1	2	3		
8-Jul-82	E	72.8805	120.6154	I07	I07.09	R	1	0	1		
8-Jul-82	E	72.5147	121.0402	I08	I08.01	R	1	1	2		
8-Jul-82	E	72.9323	121.0176	I08	I08.02	L	1	2	3		
8-Jul-82	E	72.4390	121.0438	I08	I08.03	R	1	0	1		
8-Jul-82	E	72.9188	121.0214	I08	I08.04	L	1	0	1		
8-Jul-82	E	72.0950	121.0600	I08	I08.05	R	1	0	1		
8-Jul-82	E	72.6278	121.0324	I08	I08.06	L	1	1	2		
10-Jul-82	F	71.9434	120.4661	KL01	KL01.01	R	1	0	1		
10-Jul-82	F	71.6694	120.5572	KL01	KL01.03	R	3	0	3		
10-Jul-82	F	71.6504	120.5646	KL01	KL01.05	R	1	0	1		
10-Jul-82	F	71.6622	120.5591	KL01	KL01.06	L	1	0	1		
10-Jul-82	F	71.6535	120.9456	KL02	KL02.04	L	2	0	2		
10-Jul-82	F	71.6314	120.9522	KL02	KL02.05	R	2	0	2		
10-Jul-82	F	71.7007	120.9330	KL02	KL02.06	L	12	4	16		
10-Jul-82	F	71.6639	120.9401	KL02	KL02.07	R	3	0	3		
10-Jul-82	F	71.7494	120.9177	KL02	KL02.08	L	7	3	10		
10-Jul-82	F	71.8925	120.8766	KL02	KL02.09	R	2	3	5		

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total	Cows	Bulls
10-Jul-82	F	71.9344	120.8642	KL02	KL02.10	L	4	1	5		
10-Jul-82	F	71.9587	120.8578	KL02	KL02.11	R	4	1	5		
10-Jul-82	F	71.9469	120.8633	KL02	KL02.12	L	1	0	1		
10-Jul-82	F	71.9469	120.8633	KL02	KL02.12	R	4	3	7		
10-Jul-82	F	71.7691	121.3052	KL03	KL03.01	R	1	0	1		
10-Jul-82	F	71.6569	121.3341	KL03	KL03.02	L	2	0	2		
10-Jul-82	F	71.6227	121.3451	KL03	KL03.03	R	1	0	1		
10-Jul-82	F	71.5673	121.3595	KL03	KL03.05	R	3	2	5		
10-Jul-82	F	71.4765	122.5650	KL06	KL06.01	R	1	0	1		
10-Jul-82	F	71.3678	122.5841	KL06	KL06.02	L	1	0	1		
10-Jul-82	F	71.3886	122.5806	KL06	KL06.04	L	3	0	3		
10-Jul-82	F	71.4580	122.5676	KL06	KL06.06	L	1	0	1		
10-Jul-82	F	71.2044	122.9848	KL07	KL07.08	L	1	0	1		
10-Jul-82	F	71.5264	122.9388	KL07	KL07.09	R	1	0	1		
10-Jul-82	F	71.2653	122.9754	KL07	KL07.13	R	3	1	4		
6-Jul-82	G	73.9413	119.0821	T03	T03.31	R	1	0	1		
6-Jul-82	G	73.8808	120.7548	T05	T05.01	R	3	0	3		
6-Jul-82	G	73.8183	120.7751	T07	T07.01	R	1	0	1		
6-Jul-82	G	73.8122	120.0774	T07	T07.20	L	4	0	4		
6-Jul-82	G	73.7893	120.7607	T08	T08.13	R	2	0	2		
6-Jul-82	G	73.7238	119.6360	T10	T10.02	L	4	0	4		4
6-Jul-82	G	73.6298	120.5452	T13	T13.04	L	1	0	1		
6-Jul-82	G	73.5370	120.2780	T16	T16.03	R	1	0	1		
6-Jul-82	G	73.5085	119.8997	T17	T17.02	L	2	0	2		
6-Jul-82	G	73.4723	120.1700	T18	T18.01	R	1	0	1		
6-Jul-82	G	73.3878	119.3530	T21	T21.03	R	1	0	1		
6-Jul-82	G	73.3257	119.4669	T23	T23.01	R	2	0	2		
6-Jul-82	G	73.2634	119.7123	T25	T25.01	R	1	0	1		
6-Jul-82	G	73.2650	119.3807	T25	T25.03	R	1	1	2		
6-Jul-82	G	73.2344	119.4016	T26	T26.03	R	1	0	1		
6-Jul-82	G	73.1710	119.6830	T28	T28.05	R	4	0	4		
6-Jul-82	G	73.1710	119.7295	T28	T28.07	R	4	1	5		
6-Jul-82	G	73.1700	119.7960	T28	T28.09	R	5	0	5		
6-Jul-82	G	73.1700	119.9013	T28	T28.11	R	8	3	11		
6-Jul-82	G	73.1061	119.8404	T30	T30.02	L	3	0	3		
6-Jul-82	G	73.1077	119.7525	T30	T30.03	R	4	0	4		
6-Jul-82	G	73.1073	119.8081	T30	T30.05	R	6	2	8		
6-Jul-82	G	73.0795	119.5833	T31	T31.01	R	1	0	1		
6-Jul-82	G	73.0480	119.4205	T32	T32.01	R	4	0	4		
6-Jul-82	G	73.0475	119.5020	T32	T32.03	R	1	0	1		
6-Jul-82	G	73.0463	119.7064	T32	T32.05	R	1	0	1		
6-Jul-82	G	73.0157	119.6758	T33	T33.01	R	2	0	2		
6-Jul-82	G	72.9520	119.8426	T35	T35.01	R	10	4	14		



## APPENDIX C.

Data associated with sighting of muskoxen made during the 1982 survey of Banks Island based on Latour (1985).

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total
4-Jul-82	A	74.1625	123.9064	A03	A03.07	R	2		2
4-Jul-82	A	74.1617	123.6817	A04	A04.05	R	1		1
4-Jul-82	A	73.9960	123.6752	A04	A04.11	R	13		13
4-Jul-82	A	73.9542	123.6739	A04	A04.13	R	2		2
4-Jul-82	A	73.9362	123.6726	A04	A04.15	R	3		3
4-Jul-82	A	73.8716	123.6700	A04	A04.16	L	1		1
4-Jul-82	A	74.0054	123.6768	A04	A04.18	L	1		1
4-Jul-82	A	73.9506	123.6727	A04	A04.20	L	3		3
4-Jul-82	A	73.8451	123.6674	A04	A04.28	L	13	2	15
4-Jul-82	A	73.7813	123.6651	A04	A04.30	L	3	1	4
4-Jul-82	A	73.8804	123.4492	A05	A05.01	R	8	3	11
4-Jul-82	A	73.8980	123.4485	A05	A05.02	L	3		3
4-Jul-82	A	73.9298	123.4509	A05	A05.04	L	1		1
4-Jul-82	A	74.0115	123.4550	A05	A05.08	L	2		2
4-Jul-82	A	74.0304	123.4547	A05	A05.10	L	4		4
4-Jul-82	A	74.1287	123.4579	A05	A05.12	L	12		12
4-Jul-82	A	74.4329	123.2193	A06	A06.01	R	1		1
4-Jul-82	A	74.3776	123.2198	A06	A06.02	L	2		2
4-Jul-82	A	74.4176	123.2194	A06	A06.03	R	5	2	7
4-Jul-82	A	74.3241	123.2208	A06	A06.04	L	2		2
4-Jul-82	A	74.3974	123.2195	A06	A06.05	R	1		1
4-Jul-82	A	74.3821	123.2195	A06	A06.07	R	1		1
4-Jul-82	A	74.1183	123.2209	A06	A06.12	L	2		2
4-Jul-82	A	74.0496	123.2204	A06	A06.15	R	2		2
4-Jul-82	A	74.0267	123.2213	A06	A06.17	R	3	1	4
4-Jul-82	A	73.9503	123.2200	A06	A06.19	R	10	4	14
4-Jul-82	A	74.0572	123.2196	A06	A06.20	L	1		1
4-Jul-82	A	73.8842	123.2219	A06	A06.23	R	1		1
4-Jul-82	A	73.8052	123.2198	A06	A06.27	R	20		20
4-Jul-82	A	74.0168	123.2198	A06	A06.28	L	2		2
4-Jul-82	A	74.0042	123.2207	A06	A06.30	L	1		1
4-Jul-82	A	73.7562	123.2206	A06	A06.33	R	1		1
4-Jul-82	A	73.9853	123.2213	A06	A06.34	L	2		2
4-Jul-82	A	73.9027	123.2212	A06	A06.38	L	1		1
4-Jul-82	A	73.8317	123.2200	A06	A06.42	L	8		8
4-Jul-82	A	73.7508	123.2205	A06	A06.44	L	11	4	15
4-Jul-82	A	73.7494	122.9789	A07	A07.02	L	7		7
4-Jul-82	A	73.8922	122.9796	A07	A07.03	R	2		2
4-Jul-82	A	73.8414	122.9806	A07	A07.04	L	12		12
4-Jul-82	A	73.8652	122.9812	A07	A07.06	L	6		6
4-Jul-82	A	73.8873	122.9781	A07	A07.08	L	10		10

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total
4-Jul-82	A	74.2729	122.9837	A07	A07.16	L	5		5
4-Jul-82	A	74.2792	122.9856	A07	A07.25	R	7	1	8
4-Jul-82	A	74.4268	122.7433	A08	A08.01	R	5		5
4-Jul-82	A	74.0696	122.7549	A08	A08.12	L	3		3
4-Jul-82	A	74.1658	122.7532	A08	A08.13	R	1		1
4-Jul-82	A	73.7740	122.7657	A08	A08.23	R	1		1
4-Jul-82	A	74.0861	122.5268	A09	A09.12	L	1		1
4-Jul-82	A	74.1059	122.5257	A09	A09.14	L	12		12
4-Jul-82	A	74.4332	122.5208	A09	A09.19	R	1		1
4-Jul-82	A	74.4472	122.5214	A09	A09.21	R	7		7
4-Jul-82	A	73.8152	122.0922	A11	A11.05	R	1		1
5-Jul-82	B	73.5769	120.3611	GFE01	GFE01.11	R	7	1	8
5-Jul-82	B	73.5769	120.3611	GFE01	GFE01.11	R	8		8
5-Jul-82	B	73.3854	120.3849	GFE01	GFE01.18	L	4		4
5-Jul-82	B	73.3626	120.8158	GFE02	GFE02.01	R	1		1
5-Jul-82	B	73.4218	120.8099	GFE02	GFE02.04	L	1		1
5-Jul-82	B	73.7161	121.2256	GFE03	GFE03.01	R	1		1
5-Jul-82	B	73.7027	121.2231	GFE03	GFE03.03	R	1		1
5-Jul-82	B	73.6801	122.0977	GFE05	GFE05.01	R	1		1
5-Jul-82	B	73.6994	122.0960	GFE05	GFE05.02	L	5	2	7
5-Jul-82	B	73.5710	122.1015	GFE05	GFE05.03	R	8	2	10
5-Jul-82	B	73.6128	122.1005	GFE05	GFE05.04	L	18		18
5-Jul-82	B	73.2398	122.1132	GFE05	GFE05.07	R	2		2
5-Jul-82	B	73.1374	122.1184	GFE05	GFE05.10	L	1		1
5-Jul-82	B	73.4684	122.5364	GFE06	GFE06.10	L	8		8
5-Jul-82	B	73.7305	122.9797	GFE07	GFE07.01	R	2		2
5-Jul-82	B	73.6991	122.9784	GFE07	GFE07.04	L	1		1
5-Jul-82	B	73.3346	122.9730	GFE07	GFE07.05	R	4	3	7
5-Jul-82	B	73.6856	122.9792	GFE07	GFE07.06	L	7		7
5-Jul-82	B	73.6030	122.9772	GFE07	GFE07.08	L	7		7
5-Jul-82	B	73.5132	122.9762	GFE07	GFE07.12	L	6	4	10
5-Jul-82	B	73.2959	122.9744	GFE07	GFE07.14	L	1		1
5-Jul-82	B	73.2722	122.9722	GFE07	GFE07.16	L	12		12
5-Jul-82	B	72.9579	122.9721	GFE07	GFE07.20	L	2		2
5-Jul-82	B	73.0396	123.4180	GFE08	GFE08.01	R	2		2
5-Jul-82	B	72.9785	123.4145	GFE08	GFE08.02	L	4	1	5
5-Jul-82	B	73.2326	123.4256	GFE08	GFE08.04	L	1		1
5-Jul-82	B	73.4602	123.4349	GFE08	GFE08.07	R	12	2	14
5-Jul-82	B	73.7309	123.4456	GFE08	GFE08.09	R	7	2	9
6-Jul-82	G	74.0054	120.6047	T01	T01.01	R	2	0	2
6-Jul-82	G	74.0057	120.5412	T01	T01.02	L	10	0	10
6-Jul-82	G	74.0051	120.5558	T01	T01.03	R	9	5	14
6-Jul-82	G	74.0048	120.5053	T01	T01.04	L	6	0	6
6-Jul-82	G	74.0036	120.4074	T01	T01.05	R	7	2	9
6-Jul-82	G	74.0030	120.3390	T01	T01.06	L	1	0	1
6-Jul-82	G	74.0021	120.2607	T01	T01.07	R	7	2	9
6-Jul-82	G	74.0017	120.1695	T01	T01.08	L	2	0	2

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total
6-Jul-82	G	74.0005	120.0099	T01	T01.09	R	4	2	6
6-Jul-82	G	74.0004	120.0636	T01	T01.10	L	2	0	2
6-Jul-82	G	74.0012	119.7708	T01	T01.11	R	1	0	1
6-Jul-82	G	74.0004	120.0246	T01	T01.12	L	20	0	20
6-Jul-82	G	73.9992	119.7511	T01	T01.13	R	1	0	1
6-Jul-82	G	74.0008	119.9319	T01	T01.14	L	2	3	5
6-Jul-82	G	73.9988	119.5022	T01	T01.15	R	2	0	2
6-Jul-82	G	74.0011	119.8408	T01	T01.16	L	1	0	1
6-Jul-82	G	73.9995	119.2453	T01	T01.17	R	7	2	9
6-Jul-82	G	74.0015	119.7871	T01	T01.18	L	12	0	12
6-Jul-82	G	74.0012	119.7220	T01	T01.20	L	2	0	2
6-Jul-82	G	74.0005	119.6406	T01	T01.22	L	9	0	9
6-Jul-82	G	74.0004	119.5869	T01	T01.24	L	1	0	1
6-Jul-82	G	74.0005	119.5170	T01	T01.26	L	3	0	3
6-Jul-82	G	73.9695	119.3226	T02	T02.01	R	15	3	18
6-Jul-82	G	73.9666	119.0269	T02	T02.02	L	13	0	13
6-Jul-82	G	73.9700	119.4493	T02	T02.03	R	1	0	1
6-Jul-82	G	73.9668	119.1665	T02	T02.04	L	8	0	8
6-Jul-82	G	73.9700	119.5824	T02	T02.05	R	13	5	18
6-Jul-82	G	73.9689	119.2706	T02	T02.06	L	4	2	6
6-Jul-82	G	73.9703	119.6571	T02	T02.07	R	21	6	27
6-Jul-82	G	73.9705	119.5094	T02	T02.08	L	6	3	9
6-Jul-82	G	73.9703	119.8812	T02	T02.09	R	2	0	2
6-Jul-82	G	73.9690	119.5969	T02	T02.10	R	1	0	1
6-Jul-82	G	73.9690	119.5969	T02	T02.10	L	9	0	9
6-Jul-82	G	73.9704	119.9251	T02	T02.11	R	1	0	1
6-Jul-82	G	73.9696	119.6408	T02	T02.12	L	12	0	12
6-Jul-82	G	73.9699	120.1215	T02	T02.13	R	1	0	1
6-Jul-82	G	73.9700	119.6961	T02	T02.14	L	11	0	11
6-Jul-82	G	73.9699	120.1686	T02	T02.15	R	4	3	7
6-Jul-82	G	73.9700	119.8666	T02	T02.16	L	3	0	3
6-Jul-82	G	73.9708	120.2110	T02	T02.17	R	2	1	3
6-Jul-82	G	73.9703	119.9851	T02	T02.18	L	6	0	6
6-Jul-82	G	73.9711	120.2630	T02	T02.19	R	1	0	1
6-Jul-82	G	73.9700	120.1069	T02	T02.20	L	7	0	7
6-Jul-82	G	73.9724	120.6645	T02	T02.21	R	1	0	1
6-Jul-82	G	73.9705	120.2402	T02	T02.22	L	1	0	1
6-Jul-82	G	73.9708	120.3344	T02	T02.24	L	20	0	20
6-Jul-82	G	73.9383	120.4806	T03	T03.01	R	3	0	3
6-Jul-82	G	73.9401	120.3641	T03	T03.02	L	30	0	30
6-Jul-82	G	73.9402	120.3480	T03	T03.03	R	3	0	3
6-Jul-82	G	73.9416	120.0336	T03	T03.04	L	2	0	2
6-Jul-82	G	73.9400	120.2442	T03	T03.05	R	9	3	12
6-Jul-82	G	73.9424	119.9964	T03	T03.06	L	2	0	2
6-Jul-82	G	73.9409	120.1956	T03	T03.07	R	8	2	10
6-Jul-82	G	73.9429	119.9478	T03	T03.08	L	7	0	7
6-Jul-82	G	73.9411	120.1340	T03	T03.09	R	5	2	7

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total
6-Jul-82	G	73.9424	119.9024	T03	T03.10	L	2	0	2
6-Jul-82	G	73.9416	120.0838	T03	T03.11	R	10	2	12
6-Jul-82	G	73.9425	119.7743	T03	T03.12	L	5	0	5
6-Jul-82	G	73.9425	119.8862	T03	T03.13	R	2	0	2
6-Jul-82	G	73.9419	120.0482	T03	T03.13	R	6	3	9
6-Jul-82	G	73.9417	119.2507	T03	T03.14	L	2	0	2
6-Jul-82	G	73.9423	119.8035	T03	T03.15	R	14	5	19
6-Jul-82	G	73.9409	119.0594	T03	T03.16	L	8	0	8
6-Jul-82	G	73.9427	119.7597	T03	T03.17	R	2	0	2
6-Jul-82	G	73.9423	119.6397	T03	T03.19	R	8	3	11
6-Jul-82	G	73.9426	119.5992	T03	T03.21	R	5	1	6
6-Jul-82	G	73.9420	119.4873	T03	T03.23	R	13	4	17
6-Jul-82	G	73.9420	119.4176	T03	T03.25	R	6	1	7
6-Jul-82	G	73.9414	119.1518	T03	T03.27	R	1	0	1
6-Jul-82	G	73.9411	119.1210	T03	T03.29	R	8	0	8
6-Jul-82	G	73.9096	119.1480	T04	T04.01	R	10	1	11
6-Jul-82	G	73.9088	119.1301	T04	T04.02	L	1	0	1
6-Jul-82	G	73.9095	119.4585	T04	T04.03	R	3	0	3
6-Jul-82	G	73.9091	119.3906	T04	T04.04	L	9	0	9
6-Jul-82	G	73.9099	119.5411	T04	T04.05	R	1	0	1
6-Jul-82	G	73.9093	119.4909	T04	T04.06	L	7	0	7
6-Jul-82	G	73.9090	119.8225	T04	T04.07	R	3	0	3
6-Jul-82	G	73.9096	119.6349	T04	T04.08	L	1	0	1
6-Jul-82	G	73.9091	119.9180	T04	T04.09	R	3	0	3
6-Jul-82	G	73.9097	119.6786	T04	T04.10	L	2	0	2
6-Jul-82	G	73.9086	120.0635	T04	T04.11	R	4	2	6
6-Jul-82	G	73.9085	119.9341	T04	T04.12	L	8	0	8
6-Jul-82	G	73.9084	120.0845	T04	T04.13	R	2	0	2
6-Jul-82	G	73.9081	120.1233	T04	T04.14	L	1	0	1
6-Jul-82	G	73.9080	120.1735	T04	T04.15	R	5	0	5
6-Jul-82	G	73.9082	120.1589	T04	T04.16	L	6	0	6
6-Jul-82	G	73.9094	120.2190	T04	T04.17	R	2	0	2
6-Jul-82	G	73.9083	120.1881	T04	T04.18	L	2	0	2
6-Jul-82	G	73.9085	120.2609	T04	T04.19	R	8	3	11
6-Jul-82	G	73.9083	120.2334	T04	T04.20	L	16	0	16
6-Jul-82	G	73.9077	120.2932	T04	T04.21	R	6	0	6
6-Jul-82	G	73.9088	120.2755	T04	T04.22	L	15	0	15
6-Jul-82	G	73.9081	120.3402	T04	T04.23	R	3	0	3
6-Jul-82	G	73.9084	120.3095	T04	T04.24	L	2	0	2
6-Jul-82	G	73.9086	120.3758	T04	T04.25	R	7	2	9
6-Jul-82	G	73.8777	120.4554	T04	T04.26	L	1	0	1
6-Jul-82	G	73.9078	120.4049	T04	T04.27	R	10	2	12
6-Jul-82	G	73.9083	120.4389	T04	T04.28	L	1	0	1
6-Jul-82	G	73.9085	120.4212	T04	T04.29	R	4	3	7
6-Jul-82	G	73.9079	120.5505	T04	T04.31	R	4	0	4
6-Jul-82	G	73.8783	120.4394	T05	T05.02	L	7	0	7
6-Jul-82	G	73.8800	120.6416	T05	T05.03	R	3	2	5

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6-Jul-82	G	73.8752	120.2758	T05	T05.04	L	8	0	8
6-Jul-82	G	73.8734	120.0543	T05	T05.05	R	1	0	1
6-Jul-82	G	73.8752	120.2306	T05	T05.06	L	15	0	15
6-Jul-82	G	73.8737	119.8138	T05	T05.07	R	9	2	11
6-Jul-82	G	73.8735	120.0350	T05	T05.08	L	2	0	2
6-Jul-82	G	73.8745	119.6540	T05	T05.09	R	6	1	7
6-Jul-82	G	73.8740	119.9882	T05	T05.10	L	2	0	2
6-Jul-82	G	73.8742	119.5200	T05	T05.11	R	6	0	6
6-Jul-82	G	73.8749	119.6702	T05	T05.12	L	13	0	13
6-Jul-82	G	73.8469	119.6400	T06	T06.01	R	1	0	1
6-Jul-82	G	73.8426	119.9377	T06	T06.02	L	2	0	2
6-Jul-82	G	73.8464	119.7576	T06	T06.03	R	1	0	1
6-Jul-82	G	73.8437	119.9669	T06	T06.04	L	1	0	1
6-Jul-82	G	73.8444	119.9863	T06	T06.05	R	7	3	10
6-Jul-82	G	73.8430	120.0425	T06	T06.06	L	7	0	7
6-Jul-82	G	73.8473	120.4106	T06	T06.07	R	13	1	14
6-Jul-82	G	73.8441	120.2055	T06	T06.08	L	10	0	10
6-Jul-82	G	73.8478	120.4478	T06	T06.09	R	5	2	7
6-Jul-82	G	73.8482	120.4882	T06	T06.10	L	5	0	5
6-Jul-82	G	73.8484	120.5124	T06	T06.11	R	8	2	10
6-Jul-82	G	73.8483	120.5592	T06	T06.13	R	1	0	1
6-Jul-82	G	73.8175	120.6945	T07	T07.02	L	2	0	2
6-Jul-82	G	73.8126	120.3477	T07	T07.03	R	3	1	4
6-Jul-82	G	73.8172	120.6445	T07	T07.04	L	1	0	1
6-Jul-82	G	73.8125	120.3139	T07	T07.05	R	4	1	5
6-Jul-82	G	73.8148	120.4752	T07	T07.06	L	18	0	18
6-Jul-82	G	73.8118	120.2527	T07	T07.07	R	1	0	1
6-Jul-82	G	73.8123	120.3316	T07	T07.08	L	1	0	1
6-Jul-82	G	73.8127	120.2978	T07	T07.10	L	1	0	1
6-Jul-82	G	73.8112	120.2236	T07	T07.12	L	1	0	1
6-Jul-82	G	73.8114	120.2076	T07	T07.14	L	1	0	1
6-Jul-82	G	73.8119	120.1594	T07	T07.16	L	9	0	9
6-Jul-82	G	73.8118	120.1208	T07	T07.18	L	2	0	2
6-Jul-82	G	73.8144	119.9377	T07	T07.22	L	7	1	8
6-Jul-82	G	73.7852	119.7448	T08	T08.01	R	1	0	1
6-Jul-82	G	73.7838	119.9614	T08	T08.02	L	12	0	12
6-Jul-82	G	73.7844	119.8892	T08	T08.03	R	6	3	9
6-Jul-82	G	73.7812	120.1345	T08	T08.04	L	7	0	7
6-Jul-82	G	73.7835	120.3420	T08	T08.05	R	1	0	1
6-Jul-82	G	73.7834	120.3565	T08	T08.06	L	9	0	9
6-Jul-82	G	73.7882	120.6367	T08	T08.07	R	1	0	1
6-Jul-82	G	73.7881	120.6817	T08	T08.09	R	1	0	1
6-Jul-82	G	73.7836	120.3822	T08	T08.10	L	14	0	14
6-Jul-82	G	73.7890	120.7140	T08	T08.11	R	9	1	10
6-Jul-82	G	73.7848	120.4322	T08	T08.12	L	2	0	2
6-Jul-82	G	73.7851	120.4820	T08	T08.14	L	16	0	16
6-Jul-82	G	73.7868	120.5305	T08	T08.16	L	10	0	10

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total
6-Jul-82	G	73.7872	120.6093	T08	T08.18	L	1	0	1
6-Jul-82	G	73.7572	120.7490	T09	T09.01	R	2	0	2
6-Jul-82	G	73.7554	120.6412	T09	T09.02	L	4	0	4
6-Jul-82	G	73.7567	120.6879	T09	T09.03	R	1	0	1
6-Jul-82	G	73.7552	120.6251	T09	T09.05	R	1	0	1
6-Jul-82	G	73.7497	120.3694	T09	T09.06	L	7	0	7
6-Jul-82	G	73.7511	120.4417	T09	T09.07	R	7	3	10
6-Jul-82	G	73.7486	120.3404	T09	T09.08	L	1	0	1
6-Jul-82	G	73.7486	120.3404	T09	T09.08	L	1	0	1
6-Jul-82	G	73.7493	120.4014	T09	T09.09	R	7	1	8
6-Jul-82	G	73.7477	120.1752	T09	T09.10	L	2	0	2
6-Jul-82	G	73.7498	120.3550	T09	T09.11	R	6	0	6
6-Jul-82	G	73.7469	120.2103	T09	T09.13	R	1	0	1
6-Jul-82	G	73.7481	120.1335	T09	T09.15	R	7	2	9
6-Jul-82	G	73.7493	120.0520	T09	T09.17	R	11	3	14
6-Jul-82	G	73.7177	120.1713	T10	T10.01	R	2	0	2
6-Jul-82	G	73.7172	120.2608	T10	T10.03	R	12	2	14
6-Jul-82	G	73.7186	120.1234	T10	T10.04	L	15	0	15
6-Jul-82	G	73.7182	120.2993	T10	T10.05	R	7	1	8
6-Jul-82	G	73.7175	120.1504	T10	T10.06	L	14	0	14
6-Jul-82	G	73.7171	120.1920	T10	T10.08	L	12	0	12
6-Jul-82	G	73.7197	120.4436	T10	T10.09	R	7	3	10
6-Jul-82	G	73.7174	120.2432	T10	T10.10	L	7	0	7
6-Jul-82	G	73.7199	120.4676	T10	T10.11	R	12	0	12
6-Jul-82	G	73.7180	120.3153	T10	T10.12	L	23	0	23
6-Jul-82	G	73.7199	120.5076	T10	T10.13	R	7	2	9
6-Jul-82	G	73.7183	120.3681	T10	T10.14	L	15	0	15
6-Jul-82	G	73.7192	120.5235	T10	T10.15	R	13	0	13
6-Jul-82	G	73.7193	120.4035	T10	T10.16	L	10	0	10
6-Jul-82	G	73.7223	120.7481	T10	T10.17	R	3	0	3
6-Jul-82	G	73.7197	120.4836	T10	T10.18	L	1	0	1
6-Jul-82	G	73.7208	120.5397	T10	T10.20	L	1	0	1
6-Jul-82	G	73.7203	120.5813	T10	T10.22	L	1	0	1
6-Jul-82	G	73.7225	120.7657	T10	T10.24	L	1	0	1
6-Jul-82	G	73.7225	120.8009	T10	T10.26	L	3	0	3
6-Jul-82	G	73.6901	120.8147	T11	T11.01	R	3	0	3
6-Jul-82	G	73.6904	120.7205	T11	T11.02	L	2	0	2
6-Jul-82	G	73.6906	120.7717	T11	T11.03	R	4	0	4
6-Jul-82	G	73.6902	120.6661	T11	T11.04	L	4	0	4
6-Jul-82	G	73.6904	120.7860	T11	T11.05	R	2	0	2
6-Jul-82	G	73.6883	120.2825	T11	T11.06	L	2	0	2
6-Jul-82	G	73.6899	120.6150	T11	T11.07	R	10	3	13
6-Jul-82	G	73.6910	119.8708	T11	T11.08	L	14	0	14
6-Jul-82	G	73.6892	120.5254	T11	T11.09	R	16	4	20
6-Jul-82	G	73.6897	120.4791	T11	T11.11	R	1	0	1
6-Jul-82	G	73.6896	120.4504	T11	T11.13	R	5	2	7
6-Jul-82	G	73.6886	120.2985	T11	T11.15	R	5	2	7



Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total
6-Jul-82	G	73.6888	120.2410	T11	T11.17	R	4	1	5
6-Jul-82	G	73.6882	120.2138	T11	T11.19	R	25	5	30
6-Jul-82	G	73.6886	120.1739	T11	T11.21	R	7	0	7
6-Jul-82	G	73.6887	120.1212	T11	T11.23	R	3	0	3
6-Jul-82	G	73.6886	120.0861	T11	T11.25	R	6	0	6
6-Jul-82	G	73.6897	120.0607	T11	T11.27	R	21	0	21
6-Jul-82	G	73.6892	120.0223	T11	T11.29	R	1	0	1
6-Jul-82	G	73.6905	119.9777	T11	T11.31	R	1	0	1
6-Jul-82	G	73.6601	120.0618	T12	T12.01	R	1	0	1
6-Jul-82	G	73.6605	119.9216	T12	T12.02	L	2	0	2
6-Jul-82	G	73.6584	120.2386	T12	T12.03	R	1	0	1
6-Jul-82	G	73.6597	120.0155	T12	T12.04	L	7	0	7
6-Jul-82	G	73.6579	120.3246	T12	T12.05	R	11	4	15
6-Jul-82	G	73.6585	120.4283	T12	T12.06	L	10	0	10
6-Jul-82	G	73.6583	120.3677	T12	T12.07	R	2	0	2
6-Jul-82	G	73.6602	120.6263	T12	T12.08	L	12	0	12
6-Jul-82	G	73.6587	120.4124	T12	T12.09	R	14	0	14
6-Jul-82	G	73.6605	120.5657	T12	T12.11	R	13	3	16
6-Jul-82	G	73.6297	120.4799	T13	T13.01	R	2	0	2
6-Jul-82	G	73.6302	120.5930	T13	T13.02	L	23	6	29
6-Jul-82	G	73.6307	120.1871	T13	T13.03	R	12	3	15
6-Jul-82	G	73.6316	120.0934	T13	T13.05	R	1	0	1
6-Jul-82	G	73.6304	120.4625	T13	T13.06	L	10	4	14
6-Jul-82	G	73.6318	119.9851	T13	T13.07	R	10	2	12
6-Jul-82	G	73.6298	120.4321	T13	T13.08	L	3	0	3
6-Jul-82	G	73.6321	119.9422	T13	T13.09	R	11	1	12
6-Jul-82	G	73.6297	120.4019	T13	T13.10	L	10	0	10
6-Jul-82	G	73.6298	120.3510	T13	T13.12	L	8	0	8
6-Jul-82	G	73.6301	120.2889	T13	T13.14	L	6	0	6
6-Jul-82	G	73.6309	120.2110	T13	T13.16	L	5	3	8
6-Jul-82	G	73.6320	119.9629	T13	T13.18	L	1	0	1
6-Jul-82	G	73.5997	120.0163	T14	T14.01	R	2	0	2
6-Jul-82	G	73.5994	120.2196	T14	T14.02	L	24	0	24
6-Jul-82	G	73.6004	120.1689	T14	T14.03	R	19	6	25
6-Jul-82	G	73.5999	120.2610	T14	T14.04	L	1	0	1
6-Jul-82	G	73.6001	120.1991	T14	T14.05	R	1	0	1
6-Jul-82	G	73.6001	120.2436	T14	T14.07	R	40	0	40
6-Jul-82	G	73.5999	120.3007	T14	T14.09	R	10	3	13
6-Jul-82	G	73.5692	120.2014	T15	T15.01	R	2	0	2
6-Jul-82	G	73.5686	120.2981	T15	T15.02	L	26	0	26
6-Jul-82	G	73.5696	120.1142	T15	T15.04	L	16	0	16
6-Jul-82	G	73.5383	120.0644	T16	T16.01	R	4	0	4
6-Jul-82	G	73.5377	119.8333	T16	T16.02	L	8	0	8
6-Jul-82	G	73.5379	119.9663	T16	T16.04	L	2	0	2
6-Jul-82	G	73.5368	120.3428	T16	T16.05	R	12	3	15
6-Jul-82	G	73.5079	119.9138	T17	T17.01	R	1	0	1
6-Jul-82	G	73.5094	119.7971	T17	T17.03	R	4	2	6

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total
6-Jul-82	G	73.4759	119.8393	T18	T18.02	L	1	0	1
6-Jul-82	G	73.4419	119.9820	T19	T19.01	R	6	2	8
6-Jul-82	G	73.4478	119.5419	T19	T19.02	L	15	0	15
6-Jul-82	G	73.4412	120.0590	T19	T19.04	L	3	0	3
6-Jul-82	G	73.4149	119.6882	T20	T20.01	R	4	2	6
6-Jul-82	G	73.4163	119.3757	T20	T20.02	L	5	4	9
6-Jul-82	G	73.4143	119.7714	T20	T20.04	L	22	0	22
6-Jul-82	G	73.3843	119.8153	T21	T21.01	R	9	0	9
6-Jul-82	G	73.3854	119.6868	T21	T21.02	L	11	0	11
6-Jul-82	G	73.3857	119.5865	T21	T21.04	L	11	3	14
6-Jul-82	G	73.3535	119.9091	T22	T22.01	R	2	0	2
6-Jul-82	G	73.3572	119.3756	T22	T22.02	L	10	0	10
6-Jul-82	G	73.3529	119.9279	T22	T22.04	L	17	0	17
6-Jul-82	G	73.3231	119.9073	T23	T23.02	L	2	0	2
6-Jul-82	G	73.2974	119.4208	T24	T24.01	R	1	0	1
6-Jul-82	G	73.2968	119.4457	T24	T24.02	L	1	0	1
6-Jul-82	G	73.2970	119.4753	T24	T24.03	R	1	0	1
6-Jul-82	G	73.2968	119.5019	T24	T24.04	L	10	2	12
6-Jul-82	G	73.2934	119.7714	T24	T24.05	R	6	2	8
6-Jul-82	G	73.2958	119.5782	T24	T24.06	L	3	1	4
6-Jul-82	G	73.2932	119.8385	T24	T24.07	R	2	0	2
6-Jul-82	G	73.2925	119.9195	T24	T24.09	R	8	1	9
6-Jul-82	G	73.2632	119.7434	T25	T25.02	L	1	0	1
6-Jul-82	G	73.2345	119.3192	T26	T26.01	R	1	0	1
6-Jul-82	G	73.2316	119.7698	T26	T26.02	L	14	6	20
6-Jul-82	G	73.2021	119.6566	T27	T27.01	R	5	0	5
6-Jul-82	G	73.2023	119.6287	T27	T27.02	L	18	0	18
6-Jul-82	G	73.2026	119.5883	T27	T27.04	L	1	0	1
6-Jul-82	G	73.2029	119.5449	T27	T27.06	L	8	1	9
6-Jul-82	G	73.2028	119.5030	T27	T27.08	L	4	0	4
6-Jul-82	G	73.2040	119.4643	T27	T27.10	L	8	6	14
6-Jul-82	G	73.1723	119.5670	T28	T28.01	R	13	4	17
6-Jul-82	G	73.1713	119.6490	T28	T28.03	R	2	0	2
6-Jul-82	G	73.1418	119.5859	T29	T29.02	L	3	0	3
6-Jul-82	G	73.1425	119.4267	T29	T29.04	L	1	0	1
6-Jul-82	G	73.1428	119.3803	T29	T29.06	L	1	0	1
6-Jul-82	G	73.1098	119.5521	T30	T30.01	R	1	0	1
6-Jul-82	G	73.1063	119.8604	T30	T30.07	R	1	0	1
6-Jul-82	G	73.0805	119.5187	T31	T31.02	L	1	0	1
6-Jul-82	G	73.0803	119.4755	T31	T31.03	R	11	2	13
6-Jul-82	G	73.0802	119.4894	T31	T31.04	L	1	0	1
6-Jul-82	G	73.0806	119.4416	T31	T31.05	R	3	0	3
6-Jul-82	G	73.0799	119.4061	T31	T31.07	R	5	2	7
8-Jul-82	C	73.4559	119.4843	DE01	DE01.02	L	14	5	19
8-Jul-82	C	73.5852	119.4830	DE01	DE01.03	R	6	0	6
8-Jul-82	C	73.5852	119.4830	DE01	DE01.03	R	4	3	7
8-Jul-82	C	73.6049	119.4831	DE01	DE01.04	L	8	2	10



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8-Jul-82	C	73.6649	119.4836	DE01	DE01.05	R	1	0	1
8-Jul-82	C	73.6690	119.4840	DE01	DE01.06	L	4	1	5
8-Jul-82	C	73.6833	119.4852	DE01	DE01.07	R	1	0	1
8-Jul-82	C	73.5207	119.0522	DE02	DE02.02	L	5	0	5
8-Jul-82	C	73.5623	119.0516	DE02	DE02.03	R	8	6	14
8-Jul-82	C	73.3774	119.0528	DE02	DE02.04	L	1	0	1
8-Jul-82	C	73.5426	119.0520	DE02	DE02.05	R	3	0	3
8-Jul-82	C	73.3586	119.0532	DE02	DE02.06	L	13	6	19
8-Jul-82	C	73.5251	119.0525	DE02	DE02.07	R	15	2	17
8-Jul-82	C	73.3085	119.0517	DE02	DE02.08	L	4	1	5
8-Jul-82	C	73.4097	119.0516	DE02	DE02.09	R	13	3	16
8-Jul-82	C	73.1769	119.0515	DE02	DE02.10	L	6	2	8
8-Jul-82	C	73.3949	119.0507	DE02	DE02.11	R	9	2	11
8-Jul-82	C	73.1653	119.0508	DE02	DE02.12	L	4	3	7
8-Jul-82	C	73.1505	119.0514	DE02	DE02.14	L	2	3	5
8-Jul-82	C	73.3989	118.6085	DE03	DE03.10	L	10	5	15
8-Jul-82	C	73.4154	118.6075	DE03	DE03.12	L	8	6	14
8-Jul-82	C	73.5595	118.1597	DE04	DE04.05	R	1	0	1
8-Jul-82	C	73.4758	118.1620	DE04	DE04.07	R	1	0	1
8-Jul-82	C	72.9960	118.1806	DE04	DE04.10	L	6	2	8
8-Jul-82	C	72.9772	118.1835	DE04	DE04.12	L	6	2	8
8-Jul-82	C	72.9705	118.1803	DE04	DE04.13	R	5	0	5
8-Jul-82	C	72.9955	117.7560	DE05	DE05.01	R	5	0	5
8-Jul-82	C	73.0855	117.7532	DE05	DE05.02	L	2	0	2
8-Jul-82	C	73.0228	117.7540	DE05	DE05.03	R	1	0	1
8-Jul-82	C	73.4529	117.7321	DE05	DE05.08	L	5	0	5
8-Jul-82	C	73.4523	117.2946	DE06	DE06.05	R	5	2	7
8-Jul-82	C	73.0898	117.3169	DE06	DE06.10	L	5	3	8
8-Jul-82	C	73.2150	116.8649	DE07	DE07.01	R	3	0	3
8-Jul-82	C	73.2204	116.8645	DE07	DE07.02	L	4	0	4
8-Jul-82	C	73.2485	116.8627	DE07	DE07.03	R	2	0	2
8-Jul-82	C	73.6333	116.8383	DE07	DE07.04	L	14	0	14
8-Jul-82	C	73.2955	116.8595	DE07	DE07.05	R	6	0	6
8-Jul-82	C	73.6521	116.8386	DE07	DE07.06	L	7	2	9
8-Jul-82	C	73.4293	116.8506	DE07	DE07.07	R	2	0	2
8-Jul-82	C	73.5712	116.8442	DE07	DE07.11	R	8	0	8
8-Jul-82	C	73.6663	116.3976	DE08	DE08.01	R	5	0	5
8-Jul-82	C	73.5741	116.4016	DE08	DE08.02	L	2	0	2
8-Jul-82	C	73.6108	116.3997	DE08	DE08.03	R	3	0	3
8-Jul-82	C	73.5057	116.4096	DE08	DE08.04	L	3	0	3
8-Jul-82	C	73.5665	116.4039	DE08	DE08.05	R	13	2	15
8-Jul-82	C	73.5567	116.4032	DE08	DE08.07	R	3	0	3
8-Jul-82	C	73.5097	116.4076	DE08	DE08.09	R	6	0	6
8-Jul-82	C	73.3567	115.9599	DE09	DE09.01	R	10	0	10
8-Jul-82	C	73.3903	115.9575	DE09	DE09.03	R	3	0	3
8-Jul-82	C	73.6662	115.9208	DE09	DE09.07	R	1	0	1
8-Jul-82	C	73.7289	115.9147	DE09	DE09.11	R	1	0	1

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total
8-Jul-82	E	72.8914	119.4765	I04	I04.01	R	1	0	1
8-Jul-82	E	72.7214	119.4578	I04	I04.02	L	1	0	1
8-Jul-82	E	72.3533	119.4224	I04	I04.19	R	4	1	5
8-Jul-82	E	72.9356	120.1909	I06	I06.02	L	2	1	3
9-Jul-82	D	72.1669	122.8853	HJL03	HJL03.02	L	11	4	15
9-Jul-82	D	72.5217	122.9233	HJL03	HJL03.04	L	7	3	10
9-Jul-82	D	72.5671	123.3578	HJL04	HJL04.01	R	11	0	11
9-Jul-82	D	72.5474	123.3549	HJL04	HJL04.03	R	1	0	1
9-Jul-82	D	72.1833	123.3101	HJL04	HJL04.04	L	9	2	11
9-Jul-82	D	72.2792	123.3204	HJL04	HJL04.05	R	5	1	6
9-Jul-82	D	72.2218	123.3154	HJL04	HJL04.07	R	6	2	8
9-Jul-82	D	72.1877	123.3114	HJL04	HJL04.09	R	1	0	1
9-Jul-82	D	72.1730	123.3086	HJL04	HJL04.11	R	1	0	1
9-Jul-82	D	72.0364	123.6897	HJL05	HJL05.01	R	20	5	25
9-Jul-82	D	72.0418	123.6899	HJL05	HJL05.02	L	2	0	2
9-Jul-82	D	72.0535	123.6905	HJL05	HJL05.03	R	1	0	1
9-Jul-82	D	72.0584	123.6906	HJL05	HJL05.04	L	6	7	13
9-Jul-82	D	72.0727	123.6936	HJL05	HJL05.05	R	3	0	3
9-Jul-82	D	72.0830	123.6938	HJL05	HJL05.07	R	15	0	15
9-Jul-82	D	72.1824	123.7100	HJL05	HJL05.08	L	3	2	5
9-Jul-82	D	72.5351	123.7667	HJL05	HJL05.09	R	1	0	1
9-Jul-82	D	72.5865	123.7773	HJL05	HJL05.11	R	8	3	11
9-Jul-82	D	72.7782	124.2995	HJL06	HJL06.01	R	1	0	1
9-Jul-82	D	72.8616	124.2942	HJL06	HJL06.02	L	4	0	4
9-Jul-82	D	72.7583	124.3016	HJL06	HJL06.03	R	1	0	1
9-Jul-82	D	72.3160	124.3275	HJL06	HJL06.04	L	1	0	1
9-Jul-82	D	72.5162	124.3171	HJL06	HJL06.05	R	2	0	2
9-Jul-82	D	72.0631	124.3401	HJL06	HJL06.06	L	8	0	8
9-Jul-82	D	72.0447	124.3382	HJL06	HJL06.08	L	25	10	35
9-Jul-82	D	72.4274	124.3203	HJL06	HJL06.09	R	1	0	1
9-Jul-82	D	72.3255	124.3264	HJL06	HJL06.11	R	1	0	1
9-Jul-82	D	72.2042	124.3316	HJL06	HJL06.13	R	1	0	1
9-Jul-82	D	72.1976	124.7600	HJL07	HJL07.01	R	1	0	1
9-Jul-82	D	72.2802	124.7670	HJL07	HJL07.02	L	3	3	6
9-Jul-82	D	72.0556	125.3333	HJL08	HJL08.01	R	1	0	1
10-Jul-82	F	71.8224	120.5034	KL01	KL01.02	L	1	0	1
10-Jul-82	F	71.6982	120.5468	KL01	KL01.04	L	1	0	1
10-Jul-82	F	71.5258	120.6058	KL01	KL01.07	R	6	1	7
10-Jul-82	F	71.5428	120.6011	KL01	KL01.08	L	1	0	1
10-Jul-82	F	71.4720	120.9952	KL02	KL02.01	R	1	0	1
10-Jul-82	F	71.4932	120.9901	KL02	KL02.02	L	1	0	1
10-Jul-82	F	71.5238	120.9822	KL02	KL02.03	R	1	0	1
10-Jul-82	F	71.7100	121.7155	KL04	KL04.01	R	6	0	6
10-Jul-82	F	71.5256	121.7644	KL04	KL04.02	L	1	0	1
10-Jul-82	F	71.9389	121.6584	KL04	KL04.04	L	1	0	1
10-Jul-82	F	71.7744	122.0988	KL05	KL05.02	L	3	0	3
10-Jul-82	F	71.3169	122.2100	KL05	KL05.04	L	1	0	1

Date	Survey Block	Latitude	Longitude	Transect Number	Observation Number	Observer	Adult	Calves	Total
10-Jul-82	F	71.4955	122.5611	KL06	KL06.08	L	8	0	8
10-Jul-82	F	71.6123	122.5394	KL06	KL06.10	L	7	7	14
10-Jul-82	F	71.9165	122.8802	KL07	KL07.01	R	18	5	23
10-Jul-82	F	71.5865	122.9275	KL07	KL07.02	L	1	0	1
10-Jul-82	F	71.6207	122.9236	KL07	KL07.03	R	7	3	10
10-Jul-82	F	71.5395	122.9366	KL07	KL07.04	L	13	6	19
10-Jul-82	F	71.6058	122.9268	KL07	KL07.05	R	15	0	15
10-Jul-82	F	71.4367	122.9495	KL07	KL07.11	R	3	2	5
10-Jul-82	F	71.8055	123.3036	KL08	KL08.01	R	6	2	8
10-Jul-82	F	71.4874	123.3339	KL08	KL08.01	R	6	2	8
10-Jul-82	F	71.7307	123.3112	KL08	KL08.02	L	1	0	1
10-Jul-82	F	71.7906	123.3066	KL08	KL08.03	R	1	0	1
10-Jul-82	F	71.5622	123.3251	KL08	KL08.04	L	1	0	1
10-Jul-82	F	71.6091	123.3226	KL08	KL08.05	R	1	0	1
10-Jul-82	F	71.6352	123.7071	KL09	KL09.01	R	1	0	1
10-Jul-82	F	71.6397	123.7085	KL09	KL09.02	L	1	0	1
10-Jul-82	F	71.7686	123.6989	KL09	KL09.03	R	1	0	1



